

NUCLEAR REGULATORY COMMISSION ISSUANCES

OPINIONS AND DECISIONS OF THE NUCLEAR REGULATORY COMMISSION WITH SELECTED ORDERS

July 1, 1982 - September 30, 1982

**Volume 16
Book I of II
Pages 1 - 1218**



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PREFACE

This is Book I of the sixteenth volume of issuances (1 - 1218) of the Nuclear Regulatory Commission and its Atomic Safety and Licensing Appeal Boards, Atomic Safety and Licensing Boards, and Administrative Law Judge. It covers the period from July 1, 1982 to September 30, 1982.

Atomic Safety and Licensing Boards are authorized by Section 191 of the Atomic Energy Act of 1954. These Boards, comprised of three members conduct adjudicatory hearings on applications to construct and operate nuclear power plants and related facilities and issue initial decisions which, subject to internal review and appellate procedures, become the final Commission action with respect to those applications. Boards are drawn from the Atomic Safety and Licensing Board Panel, comprised of lawyers, nuclear physicists and engineers, environmentalists, chemists, and economists. The Atomic Energy Commission first established Licensing Boards in 1962 and the Panel in 1967.

Beginning in 1969, the Atomic Energy Commission authorized Atomic Safety and Licensing Appeal Boards to exercise the authority and perform the review functions which would otherwise have been exercised and performed by the Commission in facility licensing proceedings. In 1972, that Commission created an Appeal Panel, from which are drawn the Appeal Boards assigned to each licensing proceeding. The functions performed by both Appeal Boards and Licensing Boards were transferred to the Nuclear Regulatory Commission by the Energy Reorganization Act of 1974. Appeal Boards represent the final level in the administrative adjudicatory process to which parties may appeal. Parties, however, are permitted to seek discretionary Commission review of certain board rulings. The Commission also may decide to review, on its own motion, various decisions or actions of Appeal Boards.

The Commission also has an Administrative Law Judge appointed pursuant to the Administrative Procedure Act, who presides over proceedings as directed by the Commission.

The hardbound edition of the Nuclear Regulatory Commission Issuances is a final compilation of the monthly issuances. It includes all of the legal precedents for the agency within a six-month period. Any opinions, decisions, denials, memoranda and orders of the Commission inadvertently omitted from the monthly softbounds and any corrections submitted by the NRC legal staff to the printed softbound issuances are contained in the hardbound edition. Cross references in the text and indexes are to the NRCI page numbers which are the same as the page numbers in this publication.

Issuances are referred to as follows: Commission--CLI, Atomic Safety and Licensing Appeal Boards--ALAB, Atomic Safety and Licensing Boards--LBP, Administrative Law Judge--ALJ, Directors' Decisions--DD, and Denial of Petitions for Rulemaking--DPRM.

The summaries and headnotes preceding the opinions reported herein are not to be deemed a part of those opinions or to have any independent legal significance.

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of

Docket No. 50-289
(Restart)

METROPOLITAN EDISON COMPANY
(Three Mile Island Nuclear
Station, Unit No. 1)

July 16, 1982

The Commission denies a request by the Appeal Board for authority to hear three safety issues raised by the Board *sua sponte*, and decides that the issues will be dealt with by the staff and the Commission outside the context of this adjudicatory proceeding.

ORDER

On June 30, 1982 the Atomic Safety and Licensing Appeal Board issued an Order requesting authorization to hear three issues *sua sponte*. Those issues relate to: (1) the repair of the corroded steam generator tubes; (2) whether there has been any cracking in some high pressure nozzles or their thermal sleeves; and (3) possible distorting of auxiliary feedwater spargers. The Board believes these safety issues are important to the public health and safety.

The Commission agrees with the Appeal Board that these are important issues which must be satisfactorily resolved before the Commission makes a decision on the restart of Unit One. However, it does not believe that these matters should be adjudicated in this instance by the Appeal Board. Each of the three issues can and will be dealt with by the NRC staff and the Commission, as part of the review of

uncontested issues that will take place prior to a decision on restart. There will be other safety issues relating to Unit One that also will be treated outside the context of the adjudicatory proceeding.

The Commission directs the NRC staff to examine thoroughly each of the issues raised by the Appeal/Board and to provide the Commission with its analyses and findings on the issues prior to the time the Commission is to make its decision on the restart of Unit One.

It is so ORDERED.*

For the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 16th day of July, 1982.

*Commissioner Gilinsky was not present when this Order was affirmed, but had previously indicated his approval. Had Commissioner Gilinsky been present he would have affirmed his prior vote.

ATTACHMENT TO CLI-82-12

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

**Gary J. Edles, Chairman
Dr. John H. Buck
Dr. Reginald L. Gotchy**

In the Matter of

**Docket No. 50-289-SP
(Restart)**

**METROPOLITAN EDISON COMPANY
(Three Mile Island Nuclear
Station, Unit No. 1)**

June 30, 1982

MEMORANDUM AND ORDER

In the six months since the TMI Restart Board issued its decision on Plant Design and Procedures¹ we have noted three new safety-related matters, all of which appear to be relevant to the TMI-1 reactor. We would like to raise these issues, *sua sponte*, in connection with our appellate review of plant design and technical issues. We believe the matters that we wish to pursue are important to the public health and safety, and can be satisfactorily resolved on the basis of affidavits submitted to this Board.

This is not the usual operating license proceeding; therefore, we recognize that our proposal may require Commission approval. See 10 CFR 2.785(b)(2). Our review of appeals from the decision of the TMI Restart Board is well under way. Accordingly, we respectfully request that the Commission promptly approve our undertaking a review of these issues *sua sponte* so that we may resolve them along with the parties' appeals. The proposed new issues are as follows:

¹ *Metropolitan Edison Co. (Three Mile Island Nuclear Station, Unit 1), LBP-81-59, 14 NRC 1211 (December 14, 1981); (Partial Initial Decision, ¶¶589-1329).*

1. As is widely known,² the steam generator tubes at TMI-1 have been subjected to corrosive attack as a result of contamination of the reactor coolant system. While steam generator tube corrosion is not directly relevant to the accident at TMI-2, the initiation of a highly corrosive agent into the reactor coolant system may have been the result of poor maintenance or training, which are major areas being considered in the TMI-1 restart hearing. Therefore, we should be informed of the results of investigations by licensee and staff into the cause of the reactor coolant system contamination and corrective action proposed to prevent its recurrence.

A letter dated April 30, 1982, from H. D. Hukill, GPU Nuclear, to the NRC Office of Nuclear Reactor Regulation discusses the plan for repair of the steam generator tubes. This will involve a technique of expanding and resealing the tube walls at points below where corrosion attacked the tubes. The letter indicates that the repair operation will begin after qualification testing of the tube expansion technique.

This resealing of the TMI-1 steam generator tubes constitutes a unique operation. We believe that we should be fully informed of the qualification testing of the tube expansion technique and its acceptance based on those tests. The results of the inspection program to determine any corrosion damage to reactor internals should also be provided. Finally, we should be kept informed of the progress of the repair program. This will enable us to determine promptly whether the proposed repair methods are adequate to reasonably assure the protection of public health and safety.

Based on the above discussion, we request licensee to answer the following questions:

(a) What are the results of licensee and staff investigations into the cause of the reactor coolant system contamination? What corrective actions have been implemented to prevent its recurrence?

(b) What methods of qualification testing were developed for the tube expansion technique? What are the results of the qualification testing?

(c) What are the results of the inspection program to determine any corrosion damage to reactor internals?

(d) What is the progress of the steam generator tube repair program? Reports should be provided periodically.

2. As a result of the March 1979 accident at Three Mile Island, the Commission ordered the Rancho Seco reactor (another Babcock and Wilcox facility) to shut down pending the completion of specified short-term actions intended to enhance the reactor's response to certain operational transients. In addition the licensee was to implement "as promptly as practicable" additional long-term modifications.

² See, e.g., letter dated January 25, 1982, from E. Blake, Jr., to Administrative Judge Milhollin; also PNO-TMI-81-22, November 23, 1981, and PNO-TMI-81-22A, December 1, 1981.

During a hearing called to consider whether these actions were necessary and sufficient to provide continued reasonable assurance that the facility will respond safely to feedwater transients, the hearing board considered, *inter alia*, the issue of the number of high pressure injections that should be permitted.³ The Appeal Board was not satisfied with the resolution of this issue and requested further information. ALAB-655, 14 NRC 799, 810-11 (1981).

A few weeks after this request to the Rancho Seco licensee, cracking in some high pressure nozzles and/or their thermal shields was discovered in the HPI systems of Crystal River and an Oconee unit, both B&W reactors. The Sacramento Municipal Utility District (SMUD), licensee for Rancho Seco, undertook ultrasonic and x-ray studies of its HPI system and discovered one thermal shield missing, two others cracked and loose. This led to a program of redesign and replacement of the thermal shields that is still under way.

Because the TMI-1 reactor is generally similar to the Crystal River, Oconee and Rancho Seco reactors and the HPI system is critical to its safety systems, we request licensee to provide full and complete answers to the following questions:

(a) Since the HPI nozzle problems in other B&W reactors have become known, have the TMI-1 HPI nozzles and their thermal sleeves been inspected by appropriate non-destructive testing methods? If so, are all sleeves in place? Is any cracking evident in either nozzles or thermal sleeves?

(b) If the thermal sleeves are held in place only by weld buttons (as in Rancho Seco) what is being done at TMI to correct this design to ensure that sleeves will not move out of position?

(c) What plans do you have for limiting thermal shock to the HPI nozzles and sleeves?

(d) What periodic non-destructive testing procedures do you propose for the HPI system when TMI-1 becomes operational?

3. A situation similar to that in Item 2 arises at TMI because of recent difficulties that some other reactors, including at least two B&W facilities, have recently faced in connection with the auxiliary feedwater spargers at the top of the steam generators.⁴ Several of these spargers have been found to be distorted and partially separated from their entrance nozzles. B&W has proposed a new design which is being installed in at least two reactors. Again, because this is a critical safety matter we request the licensee to provide answers to the following questions:

(a) Is the auxiliary feedwater sparger installed in TMI-1 an internal sparger similar to those which have been found damaged in some other B&W reactors?

³ This concern arose because of the proposal by the staff for greater operation of the high pressure injection (HPI) system. Each operation produces a thermal cycling of the HPI nozzles, which could eventually cause the nozzles to crack.

⁴ See PNO-III-82-38, April 13, 1982; also PNO-III-82-38A, April 16 and April 20, 1982, re Davis-Besse and Oconee reactors.

(b) If the answer to Question (a) is "yes", please describe the modifications you propose to make and the schedule for such modifications.

(c) If the answer to Question (a) is "no", please describe the auxiliary water injection system that is used at TMI-1 and state either your reasons for believing this is satisfactory, or what modifications you propose.

Subject to Commission approval, licensee's response shall be in our hands by close of business on July 26, 1982. Any replies to licensee's response shall be in our hands by close of business on August 16, 1982.

It is so ORDERED.*

FOR THE APPEAL BOARD

**Barbara A. Tompkins
Secretary to the
Appeal Board**

*Dr. Gotchy agrees in principle with the matters discussed herein but was unavailable to review this Memorandum and Order.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

OFFICE OF THE
SECRETARY

March 18, 1982

Docket Nos. 50-275-OL
50-323-OL

Byron Georgiou, Esq.
Legal Affairs Secretary to
the Governor
State Capitol Building
Sacramento, CA 95814

Dear Mr. Georgiou:

There are currently pending before the Commission petitions filed by Governor Brown and the Joint Intervenors in this proceeding for review of the Atomic Safety and Licensing Board's decision in ALAB-644, 13 NRC 903 (June 16, 1981). On March 18, 1982, the Commission declined to grant the petitions for review. 10 CFR 2.786(b)(5). The views of individual Commissioners are enclosed.

Sincerely,

Samuel J. Chilk
Secretary of the Commission

Enclosure:
Separate views of Chairman Palladino
and Commissioners Gilinsky, Bradford,
Ahearne and Roberts

*CLI number was not assigned until July 1982.

cc: Service List

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SEPARATE VIEWS OF CHAIRMAN PALLADINO

I would extend the time for the Commission to review this Appeal Board decision on Diablo Canyon seismicity. I would not make a final decision until the Commission knows more about the results of the Diablo Canyon reverification and has concluded the process with respect to its inquiry about Mr. Newmark, the staff's key expert on the seismic design of the Diablo Canyon plant.

I should say that my inclination, at this time, is not to review ALAB-644. However, I would prefer to have in hand the results of the matters I have mentioned above before I make a decision on this matter.

OPINION OF COMMISSIONERS GILINSKY AND BRADFORD ON COMMISSION REVIEW OF ALAB-644 (DIABLO CANYON SEISMIC PROCEEDING)

The Commission has had in hand since June 16, 1981, the Appeal Board's decision approving the seismic design of the Diablo Canyon nuclear power plant. The Board's decision deals with the most important issue in this Operating License proceeding in view of the discovery of a nearby earthquake fault after plant construction was well under way, and the subsequent need to redo the seismic design.

Normally, the Commission allows itself 30 days to decide whether to review an Appeal Board decision. If the Commission does not act in that time the decision is

not taken up for review. In this case, the General Counsel provided the Commission with a twenty-two page memorandum on the legal merits of the Board's decision and, at the Commission's request, the Office of Policy Evaluation, after a six-week study involving four consultants,¹ produced an 89-page analysis of the technical aspects of the decision. After receiving these memoranda, the Commission found itself unable to decide whether to take review. Altogether over a period of nine months, the Commission extended the time for deciding whether to take review thirteen times. This week the last extension was allowed to lapse.

The issues in the Appeal Board decision need to be distinguished from those of the ongoing reverification of the Diablo Canyon seismic design which has received so much attention recently. The Appeal Board decision deals with whether the *bases* of the seismic design, as formulated by the applicant and approved by the NRC staff and Licensing Board, are adequate. The reverification program assumes the correctness of those bases and looks into whether they were properly applied in the detailed design of the plant structures and equipment.

The Appeal Board decision deals with the fundamental "response spectrum" at the site — in effect, the frequency and maximum amplitude of the various oscillations of structures attached to the plant's foundation. These maximum oscillations are calculated on the basis of the agreed-upon maximum earthquake, and all safety-related structures and equipment must be designed to withstand them. The Appeal Board deals, in particular, with the adequacy of the new seismic design standard chosen after the discovery of the nearby Hosgri fault, which had not been taken into account in the original design of the plant. The case presents a number of novel problems, particularly as the assumed earthquake location is very near the plant, and the choices inescapably involve a good deal of judgment.

The difficulty the Commission found itself in, as the nine months of indecision betrays, is that the Appeal Board's decision is not a satisfactory one. On some points it can probably be rescued by different reasoning, though even that would not eliminate the need for review because of the decision's precedential significance. On at least one point, however, the use of the so-called "tau effect" to permit a substantial across-the-board relaxation of the seismic standard applied to the plant, the Board's reasoning is utterly inadequate and is very likely wrong.

Without Commission review, not only will questions remain about the correctness of the Diablo Canyon seismic design, but the Board's decision will stand as an unfortunate precedent which will undermine application of the Commission's regulations on seismic design.

¹ We would note that one of the outside consultants retained by the Commission was also acting as a consultant on seismic issues to the applicant in the Summer case. We would have preferred to disqualify this expert in order to avoid any actual or apparent conflict of interest.

Procedural Background

The NRC issued the Construction Permits for Diablo Canyon Units 1 and 2 in 1968 and 1970, respectively. These permits were issued on the assumption that the plants could be expected to face, at most, a 6.75 magnitude earthquake at a distance of about 20 miles. In 1971, Hoskins and Griffiths published a paper which established the existence of a fault approximately 3 miles offshore of the Diablo Canyon site. The existence of the fault — called the Hosgri fault — was confirmed in a 1974 study. As the plant was largely constructed, this forced a reevaluation of the seismic design at an awkward time.

After reanalysis, the applicant, the NRC staff and the ACRS concluded that, with certain specified modifications, the plants could withstand the more severe earth movements which must be assumed as a result of the Hosgri fault discovery. This followed a determination by the U.S. Geological Survey that the maximum Hosgri fault earthquake against which the plant had to be designed was one of magnitude 7.5. The applicant and NRC staff did not believe this was the right choice, but apparently convenience dictated its acceptance for the purposes of the proceeding. Much of the difficulty in this case stems, in our view, from the formal acceptance of this standard, but the less-than-wholehearted application of it.²

In the course of the Diablo Canyon Operating License proceeding, the Licensing Board conducted evidentiary hearings on the seismic issues between December 1978 and February 1979. At the close of this part of the proceeding, the parties stipulated, and the Board agreed, that it would be conservative, in view of the existence of the Hosgri fault, to attribute a magnitude of 7.5 to the Safe Shutdown Earthquake ("SSE").³ The Licensing Board also fixed the maximum vibratory ground motion that an SSE might induce at the plant site and concluded that the seismic reanalysis and redesign were adequate to withstand this SSE.⁴

The Joint Intervenors appealed several aspects of this decision to the Atomic Safety and Licensing Appeal Board, and were joined in their appeal by Governor

² No hearings were held when the Hosgri fault was discovered. The persistence of litigation over these issues to this day suggests that it would have been wise policy, as well as good law, to reopen the construction permit hearing at that time.

³ The Commission's regulations, 10 CFR Part 100, Appendix A, define the "Safe Shutdown Earthquake" as being "that earthquake which is based upon an evaluation of the maximum earthquake potential considering the regional and local geology and seismology and specific characteristics of local subsurface material. It is that earthquake which produces the maximum vibratory ground motion for which certain structures, systems, and components are designed to remain functional."

The specific structures, systems, and components which must remain functional are those which are necessary to assure: "(1) The integrity of the reactor coolant pressure boundary, (2) The capability to shut down the reactor and maintain it in a safe shutdown condition, or (3) The capability to prevent or mitigate the consequences of accidents which could result in potential off-site exposures comparable to the guideline exposures" of Part 100.

⁴ In the Matter of *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-79-26, 10 NRC 453 (1979).

Brown, participating as an *amicus curiae*. On June 16, 1981, the Appeal Board issued its decision affirming the Licensing Board's finding that the Diablo Canyon plants were adequately designed to withstand a 7.5 magnitude earthquake on the Hosgri fault. Since that date, the case has been before the Commission awaiting its decision on whether or not to take review.

Technical Background

As stated above, after the discovery of the Hosgri fault and the subsequent analysis by the U.S. Geological Survey, the parties to the Diablo Canyon proceeding agreed to an earthquake of magnitude 7.5 on a nearby portion of the fault as the fundamental seismic event against which the plant would be designed. Since the plant was in large part already constructed at this point, the reanalysis and redesign understandably did not proceed as they would have in a plant yet to be built. Every advantage was taken of slack in safety margins left in the pre-Hosgri analysis, both in developing the response spectrum and in its application. To cite a couple of examples: a larger damping value was used in analyzing structures (7 percent instead of the earlier 5 percent), which reduced the effect of ground vibrations on the structures. At the same time, credit was taken for the actual — “as-built” — strengths of materials (rather than for the minimum required strengths, as is the usual practice) so that larger vibrations became tolerable. These choices were not improper, but they do add significance to further substantial relaxations in the seismic standards for the plant on the basis of the “tau effect”. The point is that these further relaxations come on top of a redesign that has already shaved safety margins to the extent permitted in the regulations.

Probably most important along these lines was the choice of the earthquake record used in developing the response spectrum, and the manner in which that record was used. Because no record was available from a station close to a 7.5 earthquake, the applicant used the seismic record, known as the Pacoima Dam record, from a recording station near the center of a 6.5 earthquake (the 1971 San Fernando Valley earthquake). This record could plausibly be taken to represent a larger magnitude earthquake, in particular because it included the largest horizontal acceleration recorded up to that time, about 1.2g. Nevertheless, the Board's handling of this issue is unsatisfactory. As the Commission's Office of Policy Evaluation put it:

“It is not clear, however, from the Boards' records if the Pacoima Dam record in the frequency range of interest (1-10 Hz) represents a deviation from that expected for a 6.5 M earthquake. Most of the testimony on Pacoima Dam centered on a frequency range of little practical interest (*i.e.*, near 33 Hz) regarding excitation of structures important to safety. We found no supporting statement on the record which indicated that the Pacoima Dam record substantially exceeded that expected for a 6.5 M

earthquake in the frequency range of 1-10 Hz. USGS Circular 672 (p. 7) indicated that in the frequency range of 1-10 Hz, the Pacoima Dam record closely resembled what one would expect for a 6.5 M earthquake.”⁵

Which brings us to the final point, that on top of all this trimming, the Board permitted a further substantial reduction, more-or-less across the board, in the response spectrum.

“Tau Effect”

The “tau effect”, defined by Dr. Nathan Newmark, the NRC staff consultant, is used to describe the filtering effect that large rigid foundations have on the motion imparted to the building’s structure during an earthquake. Newmark’s estimate of the effect was used to justify a reduction in the response spectrum for each of the important structures in the reanalysis of Diablo Canyon. Newmark’s analysis for the reactor containment reduced the acceleration response spectrum by about 20 percent over the frequencies of interest.⁶

A reading of both the Appeal and Licensing Boards’ decisions shows an almost total reliance on the opinions of Newmark to justify the tau effect. Newmark in turn apparently relied heavily on the work of Yamahara. Yamahara’s work dealt largely with an odd-shaped building quite unlike any of the structures at the Diablo Canyon plant and with earthquakes well below the magnitudes considered at the Diablo Canyon site. Neither of these discrepancies are explained in either Board decision. The Licensing Board’s justification sounds almost mystical: “There is ample evidence of the excellent performance of large building foundations in earthquakes. Tau is a manifestation of this.”⁷ The Appeal Board responded to criticism of Dr. Newmark by stating: “Simply in light of his repeated references to Dr. Yamahara’s work, only a very crabbed reading of Dr. Newmark’s testimony could assume that he did not appreciate tau in all its ramifications.”⁸ What seems less clear is whether either Board had any idea what it was talking about.

That there is some effect of this kind is plausible, even likely; that the effect is as large as claimed by the applicant and staff is merely conjecture. Here is the way the Commission’s Office of Policy Evaluation describes the situation:

“Based on the record, it appears that a phenomenon exists which at times limits the damage to structures in the near field during an earthquake. However, we have not been able to find an empirical or analytical approach

⁵ Memorandum to the Commissioners from Forrest Remick, Subject: Diablo Canyon Design, dated November 12, 1981 with enclosure.

⁶ ALAB-644, p. 963, footnote 266.

⁷ In the Matter of *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-79-26, 10 NRC 453, 495 (1979).

⁸ ALAB-644, p. 968.

which provides justification as to why the tau effect should be calculated in one specific manner over another. Analyzed or existing data are so sparse that the actual reason for the observed effect may still not have been recognized within the engineering community. Except for the judgment of Drs. Blume and Newmark, there is no evidence to demonstrate an ability to predict tau effects over a range of earthquake magnitudes, structural configurations, and site conditions.”⁹

The fact is that the tau effect has not been used in any other nuclear plant analysis. To our knowledge, it has not been used in the design of any other large building.

Comparison of Response Spectra

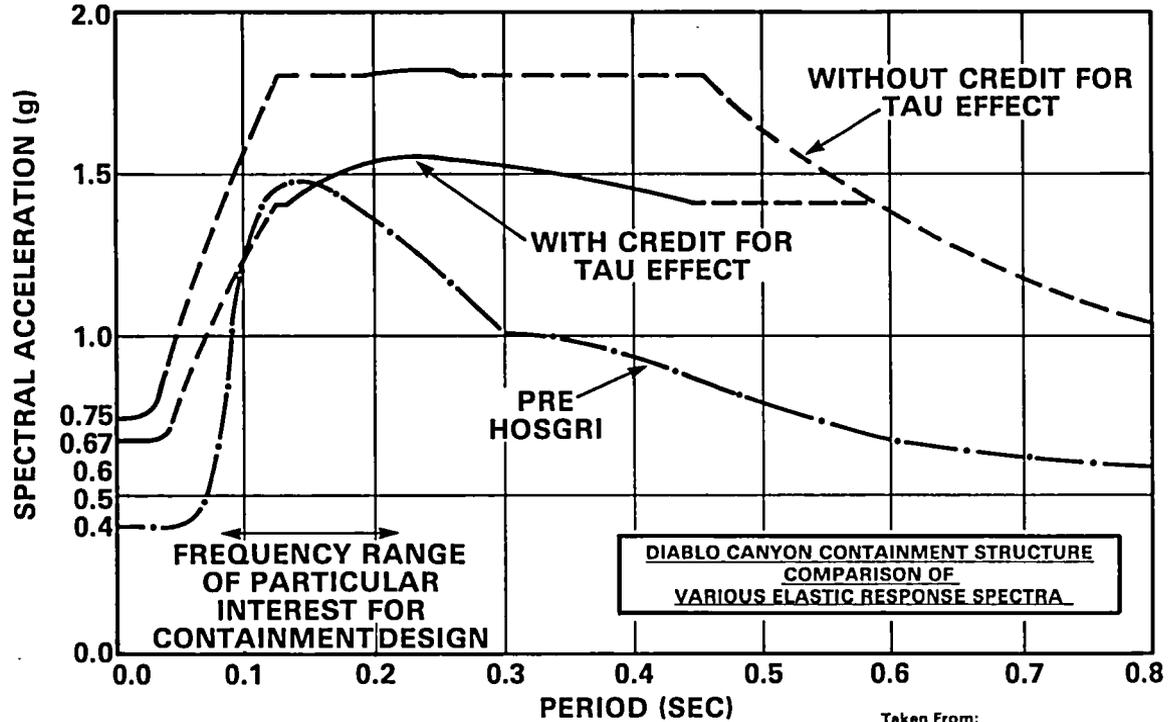
With the changes and adjustments permitted by the Board it turns out that the post-Hosgri seismic response spectrum does not in all respects represent a more severe seismic standard than the one used before the discovery of the Hosgri fault. As the accompanying diagram illustrates, in the frequency range between 5 and 10 hertz (cycles per second), a range of particular interest in the analysis of the containment building surrounding the reactor, the two response spectra are quite close. (See Fig. 4-23.) For part of this range, in fact, the old spectrum shows a *higher* response. In other words, for that part of the range the original design conditions were *more* demanding than the new ones imposed after the discovery of the Hosgri fault. This new spectrum is the basis of the engineering reanalysis and ultimately determined the extent to which the containment was to be modified. Not surprisingly, in view of the above, only minor changes were required in this area.

Precedential Significance

The Commission decision not to take review, in effect, places the Commission's stamp of approval on the Appeal Board's decision. The Board's reasoning on the "tau effect", for example, may be cited in future cases when an applicant or licensee would otherwise have difficulty in complying with our regulations. Or the tau effect could be used to compensate for deficiencies discovered in the design of completed plants. This would be a significant weakening of past agency practice.

Altogether, we cannot escape the impression that the Commission is declining review not because the opinion is essentially sound, but because it is unsound and the prospect of reviewing it is so unsettling.

⁹ Memorandum to the Commissioners from Forrest Remick, Subject: Diablo Canyon Design, dated November 12, 1981 with enclosure.



- NEWMARK 7.5M HOSGRI - 7% DAMPING
 - BLUME 7.5M HOSGRI - 7% DAMPING
 - DOE - 5% DAMPING (PRE-HOSGRI RESPONSE SPECTRUM)
- SPECTRUM USED IS COMPOSITE USING HIGHER OF THE NEWMARK/BLUME SPECTRA

Taken From:
 "Seismic Evaluation for Postulated
 7.5M Hosgri Earthquake, Units 1 & 2,
 Diablo Canyon Site"
 FIGURE NO. 4-23

OPINION OF COMMISSIONER AHEARNE ON COMMISSION REVIEW OF ALAB-644 (DIABLO CANYON SEISMIC PROCEEDING)

Commissioners Gilinsky and Bradford are releasing their recently written opinion on Commission review of this case, and describe the Commission as being unable to act on it. In the interest of a more complete picture I am also releasing my opinion, distributed to my fellow Commissioners three months ago.

The issue before the Commission was whether to take review of the Appeal Board decision (ALAB-644). After reviewing the decision, and the staff memoranda referred to by Commissioners Gilinsky and Bradford (the last being the Office of Policy Evaluation memorandum of November 5th), I sent out the following on December 9, 1981:

I would not take review and I do not believe the record needs to be reopened again. However, the reader should understand three points about not taking review:

- (1) Not taking review of ALAB-644 does not in any way make a judgment concerning my position or the Commission's position with respect to the latest problems that have arisen at the Diablo Canyon plant, which led to the recent suspension of the low power license.
- (2) Not taking review does not indicate that either I or the Commission believe issues regarding earthquake estimates and seismic design are unimportant. Because of their significance for Diablo Canyon, the current problems were considered sufficiently important to lead to license suspension.
- (3) Not taking review is not synonymous with not examining.

To reach the conclusion on whether or not to take review, I did examine ALAB-644, the filings of all parties to the Commission on ALAB-644, and extensive staff reviews prepared by the Office of General Counsel and the Office of Policy Evaluation. I also reviewed USGS Circular 672 and USGS Open File Report 81-365. And, finally, I reviewed the Diablo Canyon SER Supplement No. 5.

I reached the following conclusions:

- (1) There is no real question that magnitude 7.5 is large enough for the SSE for Diablo Canyon. There is some question that it may be too large. This question is not irrelevant, although M7.5 is accepted by the NRC staff, because many of the other arguments would diminish or disappear if one were to conclude, as did at least one Board-called witness, that a lower value earthquake would be more appropriate.
- (2) There are several engineering issues addressed at length here for the first time in an NRC licensing case, making the decision quite important because it may establish precedents.
- (3) There are several important issues relating to earthquake analysis.

In my opinion the only remaining significant engineering issue is what modification is appropriate in predicting a building's response to earthquakes because the building is a large rigid object. Some effect is plausible. The Board used an analogy to waves affecting a large boat differently than a string of small boats. Probably there are two effects involved:

- (1) When the wavelength of a signal is small with respect to the size of an object which the signal perturbs, the resulting effect is modified from that when the wavelength is comparable to the object size. The resulting effect is an integration because the body does not respond to each individual wave. This is the basic phenomenon which the Board's analogy addresses. This effect has little significance here since the important wavelengths (for the 1-10 Hz range) are several hundred to several thousand feet, *i.e.*, comparable to or larger than the plant.
- (2) When a large object is perturbed by many signals, arriving so that the accelerations vary both in magnitude and frequency, and perhaps in direction, the perturbing signals are incoherent. The resulting effect upon the building is a smoothing or an averaging of the various accelerations. Thus the early references in the literature by Yamahara, Ambraseys, and Scanlan refer to an average acceleration over the width of the foundation (SER No. 5, p. C-10). In SER No. 5 Newmark used the "travel" time across an "effective width" for the building by taking the appropriate distance to be the square root of the area. He then averaged the spectrum over this time to develop his tau reduction factor.

The effect is plausible and the records cited from the Hollywood Storage Building show the effect exists for the frequencies of interest. The two important questions are what magnitude is the effect and should the NRC allow for it in determining if our regulations are met.

If the technique is explainable, defensible, and reproducible, then I believe the NRC should allow for it. This technique appears to be sufficiently new and of limited applicability (only to large buildings with rigid foundations, such as nuclear plants) that it is not widely known. In addition, the data base is very limited. However, all earthquake analysis suffers from a limited data base, particularly analyses for very large earthquakes and in the near field (both representative of Diablo Canyon).

Those unfamiliar with seismic analysis may be surprised to see that the model used for the containment building, which contains the reactor and is a cylinder about 150 feet in diameter and 210 feet high, is a stick. The improved model uses weights distributed along the stick and examines the response of the weighted stick as the base shakes.

Dr. Newmark modified the input to this model by using a reduction to incorporate effects of building size at the higher frequencies. The approach is reasonable, all seismic data in this area are weak, and in the end the decision will be based upon engineering judgment. On balance, I support Dr. Newmark.

The third area, that of earthquake analysis, had many issues, but the possibly troubling one was whether the Pacoima Dam spectrum can be used to model the near field of an earthquake of magnitude 7.5. The earthquake registered at Pacoima Dam is estimated to be of magnitude 6.5-6.6. Dr. Newmark and others argued that the recording spot was on a rocky ridge which led to a much stronger signal than would be true of a less unique location. Dr. Newmark found the Pacoima Dam spectrum was well fit by a design spectrum appropriate to 0.75g, even though the measurement had a peak of 1.25g, the highest horizontal acceleration ever recorded. In SER No. 5 Dr. Newmark argued that in the near field of an earthquake the peak acceleration is not a reasonable basis to draw a design spectrum and it is more appropriate to match the overall spectrum.

Dr. Boore, *et al.*, in USGS Circular 672 adopted the 1.25g as appropriate to the maximum considered amplitude (they were making estimates for the Trans-Alaska Pipeline, which traverses regions of seismicity up to magnitude 8.5). Taking 1.25g as the maximum is consistent with the concept of magnitude saturation. In this particular case, they would be using 1.25g as the maximum appropriate to the largest earthquake being considered. The USGS reduced the measured spectrum to get an estimate of the spectrum for the magnitude 6.5 earthquake that triggered the Pacoima Dam record. They argued that Newmark and Hall (the basic reference for establishing response spectra) overestimates the response above 8 Hz. By removing the components above 9 Hz, the authors modified the Pacoima Dam record to get 0.9g as the appropriate maximum horizontal acceleration for a 6.5 magnitude earthquake. They then interpolate between 0.9g for M6.5 and 1.25g for M8.5 to get 1.1g for M7.5. Boore, *et al.*, rejected the use of the Pacoima Dam spectrum as anomalous because “[t]he authors are not aware of any investigations of possible side effects that *conclusively demonstrate* an anomalous amplification (greater than 25-50 percent) of recorded motion in the frequency range 1-10 Hertz.” (Emphasis added) (p. 7, Circular 672)

Finally, Open File Report 81-365 by Joyner, *et al.*, proposes a new equation relating maximum horizontal acceleration and maximum horizontal velocity to earthquake magnitude and distance to the surface projection of the fault rupture, d . Unfortunately, like all available analyses, this report is based on data outside the near field of large earthquakes. The authors state: “The data set contains no recordings at rock sites with d less than 8 kilometers for earthquakes with M greater than 6.0, and caution is indicated in applying equations to rock sites at shorter distances for earthquakes of larger magnitude.” (p. 15) Diablo Canyon is a rock site with d approximately 5.8 kilometers and, for design purposes, considers an M of 7.5, i.e., exactly the type of site outside the data set, for which the authors indicated caution should be used.

Once again, this area is one in which data are poor and experts disagree. Dr. Newmark's arguments are based on matching the significant portions of the spectrum, and rest on his professional judgment. The criticisms of accepting the

Newmark position are also judgments, as shown by the qualifications in the Boore and Joyner reports. I come down on the side of Dr. Newmark.

I agree that seismic design is a major issue relating to safe operation of the Diablo Canyon Nuclear Power Plant. However, I do not believe another full-scale adjudicatory review will add any additional light to the extensive reviews already done. Controversy in Diablo Canyon centers on the validity of judgments made by experts. An extensive record documents a wide range of expert opinion. So long as the Commission empowers Boards to sit for us to examine such disputed issues as the seismic design for Diablo Canyon, our decision to take review of a Board's decision should be based on whether there are any basic policy issues which must be addressed or any serious errors.

The basic question we have before us is whether an existing plant redesigned to some extent to withstand the predicted effects of a large earthquake from a nearby fault is adequately designed. We are not addressing what should be the design criteria for new plants nor are we addressing what should be the design criteria for this plant were it seeking a construction permit. The degree of conservatism that the Commission imposes must take into consideration a greater level of realistic estimates with regard to modifications or acceptance of an existing plant than for projects not yet begun.

With the help of the Commission staff, the Commission has examined the seismic issues. This examination was necessary if we were to make an informed assessment. I agree in general with the Appeal Board decision and I have not identified any serious errors. Therefore, I do not believe the Commission should take review.

SEPARATE VIEW OF COMMISSIONER ROBERTS

I vote against review of ALAB-644 by the Commission based on my evaluation of the opinion and of the various analyses prepared to assist the Commission in its decision by the Office of General Counsel, the Office of Policy Evaluation, and by seismic consultants specially hired by the Commission for this task. All of the groups listed above recommended that the Commission not review ALAB-644. Under 10 CFR §2.786(b), the Commission may not review ALAB-644 simply because it is intrigued by the technical issues raised or because it thinks its understanding of the technical issues is more sophisticated than the Appeal Board's understanding. Similarly, Commission review is not to be undertaken simply to correct the factual record in the proceeding. Rather, Commission review should be undertaken when the Appeal Board has clearly erroneously decided factual issues or incorrectly decided important legal or policy issues. I do not believe this to be the case here.

I agree with Commissioner Ahearne's technical analyses of the issues raised in the opinion. Beyond that, I wish to respond to some of the misleading statements made in the dissent. First, with regard to the allegation that the length of time between issuance of ALAB-644 and issuance of this Order reveals that the Appeal Board's decision is unsatisfactory. I note that I voted not to review ALAB-644 on November 23, 1981, several weeks after receipt of OPE's last analysis of the opinion. Second, with regard to the acceptability of assuming a magnitude 7.5 earthquake on the Hosgri Fault, I note that the figure was described as "grossly conservative"¹ during the hearing and that, on appeal, even the Joint Intervenors agreed that this figure was "acceptably conservative."²

Third, with regard to the Appeal and Licensing Boards' reliance on the expert testimony of Dr. Nathan Newmark, I note that, at the time of his death, Dr. Newmark was considered the preeminent authority on seismic engineering and seismology in this country. The technical issues resolved by the Boards in this case were not simply fact questions whose answers were within the grasp of educated laymen. Rather, resolution of these issues required the engineering judgment of experts who had vast experience not only in the history of earthquakes and how earthquakes move but also in how an earthquake transmits energy to a building and how that building, in turn, responds. Dr. Newmark's great depth of experience in every facet of the required analysis is precisely why the Boards properly relied on his testimony.

Finally, with regard to the allegation that the Commission declined to review ALAB-644 because it believes the decision is unsound and because to reveal that would be "unsettling," I wish to state that not only is that not the basis for the Commission's decision but that the process undertaken to determine whether to review ALAB-644 revealed quite the contrary. The history of the Diablo Canyon proceeding reveals a willingness to examine and reexamine the design basis of this plant. Evidentiary hearings on the seismic issues in the Diablo Canyon operating license proceeding began in December of 1978.³ In its decision of September, 1979, the Licensing Board found that the plant was adequately designed to withstand any earthquake that could reasonably be expected.⁴ The Licensing Board found that the Staff's seismic review was the most extensive ever undertaken and that the Applicant's review was extraordinarily thorough.⁵ On October 15, 1979, a large earthquake struck California's Imperial Valley, approximately

¹ *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-79-26, 10 NRC 453, 480 (1979).

² *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-644, 13 NRC 903, 913 (1981).

³ *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-79-26, 10 NRC 453, 458 (1979).

⁴ *Id.* at 507.

⁵ *Id.*

250 miles southeast of the Diablo Canyon site. The Appeal Board reopened the record and took evidence itself. At that trial, 17 expert witnesses appeared, including two ACRS consultants called by the Appeal Board.⁶ Subsequent to the Appeal Board's decision, the Commission hired its own seismic consultants. This lengthy indepth checking and rechecking of the bases of the seismic design hardly reveals fear on the part of the Commission to scrutinize the numbers.

⁶ *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-644, 13 NRC 903, 912 (1981).

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gillnsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of

Docket No. 50-289
(Restart)

METROPOLITAN EDISON COMPANY,
et al.
(Three Mile Island, Unit 1)

July 16, 1982

The Commission denies a motion by the licensee asking the Commission to decide expeditiously whether (1) it intends to prepare a supplemental environmental impact statement (SEIS) on psychological health effects associated with the operation of this facility in accordance with the decision in *PANE v. NRC*, No. 81-1131 (D.C. Cir., May 14, 1982), and if so, (2) to proceed expeditiously with its preparation and circulation, and (3) to decide that no hearing would be permitted on the SEIS. The Commission determines that it does not at present have enough information to decide whether the terms of the court's decision require the preparation of an SEIS.

ORDER

On May 24, 1982, the licensee, Metropolitan Edison Company, filed a "Motion with Respect to Psychological Health Issue" with the Commission, asking that the Commission decide expeditiously whether, in accordance with the decision of the D.C. Circuit Court of Appeals in *PANE v. NRC*, No. 81-1131 (May 14, 1982), it

intended to prepare a supplemental environmental impact statement on psychological health effects associated with the operation of Three Mile Island Unit 1. The licensee further asked the Commission, if its determination of this question was that an SEIS would be prepared, to proceed expeditiously with its preparation and circulation, and to decide that no hearing would be permitted on the SEIS. The licensee stated that the Commission should take these actions without prejudice to its pursuit of appellate review of the D.C. Circuit's decision.

Responses to the licensee's motion were filed by PANE on June 3 and by the staff on June 10, 1982. Briefly, PANE urges the Commission to decide to prepare an SEIS and to hold that the SEIS must be considered in an adjudicatory hearing. The staff takes the position that the staff is not now in possession of enough information on the psychological health of residents in the TMI area to make a determination whether to recommend to the Commission that an SEIS be prepared. Efforts to collect such information are in progress at this time. The staff urges that such questions as the right to a hearing if an SEIS is prepared, and the need for and appropriateness of exemptions from the Commission's regulations after the determination whether to prepare an SEIS is made, need not and should not be addressed at this time. Rather, the staff recommends that the Commission defer a decision on these questions until the staff is in a position to report to it on the status of psychological health of residents in the TMI vicinity.

We agree with the staff that the Commission does not at present have enough information to decide whether the terms of the court's decision in *PANE v. NRC* require preparation of an SEIS, and that it would be premature to decide what procedures should be followed if a decision is made at some future time that an SEIS should be prepared. Accordingly, the licensee's motion is DENIED.

For the reasons stated in his attached separate views, Commissioner Gilinsky dissents from this decision.

It is so ORDERED.*

For the Commission,

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 16th day of July, 1982.

*Commissioner Gilinsky was not present when this Order was affirmed, but had previously indicated his disapproval. Had Commissioner Gilinsky been present he would have affirmed his prior vote.

SEPARATE VIEWS OF COMMISSIONER GILINSKY

I would grant GPU's request that the Commission decide as soon as possible whether a supplemental environmental impact statement regarding the psychological impacts of restarting TMI-1 is required. The Commission has, for more than six months, been aware that some sort of assessment of the psychological effects of restarting TMI-1 might have to be made. Indeed, the NRC staff has already spent over a quarter of a million dollars to obtain the advice of a wide array of psychologists and other experts. In these circumstances, it is either disingenuous or a confession of managerial failure for the Commission to say that it "does not at present have enough information" to determine whether the decision in *PANE v. NRC* requires preparation of a supplemental EIS. The Commission should, by any reasonable standard, be able to decide this question by the end of this summer.

The difficulty seems to be that the Commission is more interested in keeping *PANE v. NRC* a live controversy in order to justify Supreme Court review than in concluding the TMI-1 case. As matters presently stand, the Commission's refusal to act as soon as possible could postpone the decision on restarting TMI-1 for months, depending upon whether the Supreme Court takes review of this case and upon the outcome of any such review.¹ The Commission's willingness to risk such delay in order to seek the reversal of an extraordinarily narrow ruling of the Court of Appeals² is particularly ironic since one of the Commission's principal reasons for not admitting the psychological stress contention was the fear that hearing this contention might prolong the proceeding. It is as if the Commission remembers nothing.

¹ Assuming that the other safety problems, such as the steam generator tube corrosion, which are not part of the adjudicatory proceeding will be resolved by then.

² Psychological stress contentions would need to be admitted in proceedings other than TMI-1 restart only where the impacts consist of "post-traumatic anxieties, accompanied by physical effects and caused by fears of recurring catastrophe," that is, only in hearings which deal with the continued operation of a facility which has already suffered an accident of a severity comparable to that of the TMI-2 accident. If the Commission feels threatened by such a possibility then the public really does have something to worry about.

This entire episode shows that nuclear fear-mongering is not restricted to the anti-nuclear side. The Court's narrow ruling, in effect that there are extreme circumstances in which public fear must be taken into account in the Commission's administrative proceedings, has been depicted as a death warrant for nuclear power, and more, if not reversed. It is nothing of the sort. What these critics, many of whom should know better, fail to face up to is that, because of the Atomic Energy Act's preemption of State authority, their unwillingness to consider any but strictly radiological effects would mean that if fifty percent of the population of Middletown were to suddenly drop dead from fear of the TMI-1 restart, not a single entity of the State or Federal Government below the level of the U.S. Congress could take that fact into account in deciding whether to restart Unit 1.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gillinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of

Docket Nos. 50-361-OL
50-362-OL

**SOUTHERN CALIFORNIA EDISON
COMPANY**

**(San Onofre Nuclear Generating
Station, Units 2 and 3)**

July 16, 1982

On the basis of its immediate effectiveness review pursuant to 10 CFR 2.764(f), the Commission concludes that resolution of the issues covered by the Licensing Board's decisions in this operating license proceeding (LBP-82-3, 15 NRC 61 (1982); LBP-82-39, 15 NRC 1163 (1982); LBP-82-46, 15 NRC 1531 (1982)) does not present the type of safety problem which would require a further stay of their effectiveness, and decides that these decisions may go into effect. The license authorized is made subject to the condition that for operation above 5% of rated power to continue beyond six months from the date of issuance of the full-power license, the offsite medical arrangements issue retained by the Licensing Board in LBP-82-39 must be resolved or further operation above 5% must be justified under 10 CFR 50.47(c)(1). The Commission explains that its decision does not authorize issuance of the requested full-power license for Units 2 and 3 of this facility and further that they will not be issued until the staff has briefed the Commission on other, uncontested, issues and the Commission has voted on whether to authorize the licenses.

ORDER

On January 11, 1982, the Atomic Safety and Licensing Board (Licensing Board) issued a partial initial decision for San Onofre Nuclear Generating Station, Units 2 and 3, which found that the seismic design of those units was adequate and authorized the issuance of operating licenses for operation up to 5% of rated power.¹ On May 14, 1982, the Licensing Board filed an initial decision dealing with the contested emergency planning issues and which, insofar as the contested issues are concerned, authorized the Director of Nuclear Reactor Regulation to issue the licenses to operate San Onofre 2 and 3 at full power subject to confirmation by the NRC staff that certain emergency preparedness matters have been completed and meet the requirements of 10 CFR 50.47. In addition, the Licensing Board retained jurisdiction over two issues: (1) the adequacy of the existing siren notification system in San Clemente, and (2) the adequacy of offsite medical arrangements for members of the public who may be injured in an accident. Following receipt and evaluation of comments on this matter the Licensing Board decided, in an order dated June 16, 1982, that information on the deficiencies of the existing siren notification system forwarded by the City of San Clemente and Intervenors Guard, *et al.* did not merit reopening the proceeding and that the existing public notification system provides reasonable assurance that adequate notice to the public will be accomplished. See 10 CFR 50.47(b)(5) and Appendix E, IV, Part D, 3. With this ruling, the Licensing Board terminated its jurisdiction over this matter.

In its May 14, 1982 decision the Licensing Board also found that Southern California Edison had not yet demonstrated the sufficiency of arrangements for medical services for members of the public. However, the Licensing Board decided that the deficiencies in such medical arrangements were not so significant to preclude full-power operation for a period not to exceed six months while remedial action is undertaken by Southern California Edison and reviewed by the Licensing Board. See 10 CFR 50.47(c)(1).

The Commission will conduct an immediate effectiveness type review of the Licensing Board's decision on this issue pursuant to 10 CFR 2.764(f). The Board's subsequent order will be effective pending the Commission's review. The Licensing Board is to give the Commission a report on the status of the offsite medical arrangements question within four months of the date of issuance of the full-power operating license.

The Commission has reviewed the Licensing Board's January 11, 1982 and May 14, 1982 decisions as well as the June 16 order pursuant to 10 CFR 2.764(f),

¹ A license to load fuel and operate up to 5% of rated power for Unit 2 was issued February 16, 1982, No. NPF-10.

and has concluded that the resolution of the issues covered by these decisions does not appear to present the type of safety problem which would require the effectiveness of these decisions to be further stayed. The Commission has therefore decided that these decisions may go into effect. This decision is without prejudice to the subsequent appellate review by the Appeal Board and the Commission. The license is subject to the condition that for operation above 5% of rated power to continue beyond six months from the date of issuance of the full-power license, the offsite medical arrangements issue must be resolved or further operation above 5% of rated power must be justified under 10 CFR 50.47(c)(1). Since the Licensing Board decisions deal only with matters in controversy before the Board, however, and not with uncontested issues which are considered separately by the staff and the Commission, this order does not authorize the issuance of the requested full power licenses. Such licenses will not be issued until the staff has briefed the Commission on the remaining issues and the Commission has voted on whether to authorize the licenses.

It is so ORDERED.*

For the Commission,

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 16th day of July, 1982.

*Commissioner Gilinsky was not present when this Order was affirmed, but had previously indicated his approval. Had Commissioner Gilinsky been present he would have affirmed his prior vote.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matters of

Docket Nos. 50-247
50-286

CONSOLIDATED EDISON COMPANY OF
NEW YORK
(Indian Point, Unit 2)

POWER AUTHORITY OF THE STATE OF
NEW YORK
(Indian Point, Unit 3)

July 27, 1982

Upon consideration of a series of pleadings by licensees concerning the Commission's plan to conduct a discretionary hearing on the possible suspension of Units 2 and 3 of the Indian Point facility, the Commission denies: (1) an appeal by a licensee from the order of the Licensing Board (established at the direction of the Commission to determine, *inter alia*, the issues which the forthcoming hearing are to address) admitting certain intervenors to the hearing; (2) a petition by a licensee for directed certification of its request for stay or dismissal of the proceeding; and (3) a petition by the two licensees for directed certification of their charges that the Board exceeded or misapplied its jurisdiction in admitting contentions. The Commission, *inter alia*, provides further guidance on the admission of contentions and the formulation of issues for hearing, and remands the matter to the Board for expeditious reconsideration of its rulings on the admissibility of the contentions in light of the additional guidance.

RULES OF PRACTICE: INTERVENTION

There is nothing in 10 CFR 2.714 or the case law interpreting that rule which permits licensing boards to exclude certain groups from a licensing proceeding because of their opinions on nuclear power, either generally or as related to certain plants, or because of their conduct outside the proceeding.

NUCLEAR REGULATORY COMMISSION: SUPERVISORY AUTHORITY

The Commission has an inherent supervisory power over the conduct of its adjudicatory proceedings, including the authority to provide guidance on the admissibility of contentions before licensing boards. *See Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), CLI-77-8, 5 NRC 503, 516-17 (1977); *United States Energy Research and Development Administration* (Clinch River Breeder Reactor Plant), CLI-76-13, 4 NRC 67, 75-76 (1976).

MEMORANDUM AND ORDER

I. BACKGROUND

In a petition dated September 17, 1979, the Union of Concerned Scientists (UCS) requested that the Commission revoke the Indian Point Unit 1 license and suspend operations at Indian Point Units 2 and 3. On February 11, 1980, the Director of Nuclear Reactor Regulation issued a decision pursuant to 10 CFR 2.206 granting in part and denying in part the petition. The Director granted that part of the petition calling for revocation of the license for Unit 1, and also required the licensees to implement certain interim measures in regard to Units 2 and 3. He denied that part of the petition requesting suspension of the licenses for these units.

On May 30, 1980, the Commission expressed its intent to conduct a discretionary proceeding in the vicinity of the Indian Point Units and initiated an informal proceeding "for the purpose of determining, on an expedited basis, the issues which the adjudicatory proceeding is to address, and the criteria to be used for the ultimate decision in that proceeding. *Consolidated Edison Co. of New York* (Indian Point, Unit 2) and *Power Authority of the State of New York* (Indian Point, Unit 3), Docket Nos. 50-247 and 50-286, unpublished order dated May 30, 1980, slip op. at 3 (emphasis added). On January 8, 1981, the Commission issued an Order

which set forth the questions it wished addressed in this proceeding and the procedures to be followed.¹

¹ *Consolidated Edison Co. of New York, Inc.* (Indian Point, Unit 2) and the *Power Authority of the State of New York* (Indian Point, Unit 3), CLI-81-1, 13 NRC I (1981).

The questions posed by the Commission in its January 8, 1981 order were:

1. What risk may be posed by serious accidents at Indian Point 2 and 3, including accidents not considered in the plant's design basis, pending and after any improvements described (2) and (4) below?
2. What improvements in the level of safety will result from measures required or referenced in the Director's Order to the licensee, dated February 11, 1980? (A contention by a party that one or more specific safety measures, in addition to those identified or referenced by the Director, should be required as a condition of operation of the facility or facilities, would be within the scope of this inquiry.)
3. What is the current status and degree of conformance with NRC/FEMA guidelines of state and local emergency planning within a 10-mile radius of the site and, of the extent that it is relevant to risks posed by the two plants, beyond a 10-mile radius? In this context, an effort should be made to establish what the minimum number of hours warning for an effective evacuation of a 10-mile quadrant at Indian Point would be. The FEMA position should be taken as a rebuttable presumption for this estimate.
4. What improvements in the level of emergency planning can be expected in the near future, and on what time schedule, and are there other specific offsite emergency procedures that are feasible and should be taken to protect the public?
5. Based on the foregoing, how do the risks posed by Indian Point Units 2 and 3 compare with the range of risks posed by other nuclear power plants licensed to operate by the Commission? (The Board should limit its inquiry to generic examination of the range of risks and not go into any site-specific examination other than for Indian Point itself, except to the extent raised by the Task Force.)
6. What would be the energy, environmental, economic or other consequences of a shutdown of Indian Point Unit 2 and/or Unit 3?
7. Does the Governor of the State of New York wish to express an official position with regard to the long-term operation of the units?

Id. 13 NRC at 7-8.

Questions 1 and 2 were modified and made more specific in the Commission's Order of September 18, 1981. These questions now read:

1. What risk may be posed by serious accidents at Indian Point 2 and 3, including accidents not considered in the plants' design basis, pending and after any improvements described in (2) and (4) below? Although not requiring the preparation of an Environmental Impact Statement, the Commission intends that the review with respect to this question be conducted consistent with the guidance provided the staff in the Statement of Interim Policy on "Nuclear Power Plant Accident Considerations under the National Environmental Policy Act of 1969;" 44 FR 40101 (June 13, 1980).⁵
2. What improvements in the level of safety will result from measures required or referenced in the Director's Order to the licensee, dated February 11, 1980? (A contention by a party that one or more specific safety measures, in addition to those identified or referenced by the Director, should be required as a condition of operation would be within the scope of this inquiry if, according to the Licensing Board, admission of the contention seems likely to be important to resolving whether (a) there exists a significant risk to public health and safety, notwithstanding the Director's measures, and (b) the additional proposed measures would result in a significant reduction in that risk.)

Id. 14 NRC at 612-613.

⁵In particular, that policy statement indicates that:

Attention shall be given both to the probability of occurrences of releases and to the environmental consequences of such releases;

The reviews "shall include a reasoned consideration of the environmental risks (impacts) attributable to accidents at the particular facility or facilities. . . .";

"Approximately equal attention should be given to the probability of occurrence of releases and to the probability of occurrence of the environmental consequences. . . ."; and

Such studies "will take into account significant site and plant-specific features. . . ."

Thus, a description of a release scenario must include a discussion of the probability of such a release for the specific Indian Point plants.

In the January 8, 1981 Order, the Commission set out the purpose of the Special Proceeding by stating that its primary concern was "the extent to which the population around Indian Point affects the risk posed by Indian Point as compared to the spectrum of risk posed by other nuclear plants." *Id.*, 13 NRC at 6. Finally, on September 18, 1981, the Commission issued another Order in which it further clarified both the issues that it wished addressed and the procedures to be followed in the hearing. *Id.*, CLI-18-23, 14 NRC 610 (1981).

II. PASNY'S APPEALS²

A. General

In the order we issue today we address primarily a series of pleadings filed by the Power Authority of the State of New York (PASNY), licensee of Unit No. 3.³ PASNY asks us by way of directed certification to stay or dismiss the evidentiary hearing, and to rule on whether the Licensing Board below has misconstrued the Commission's instructions in its admission of contentions. PASNY has also appealed pursuant to 10 CFR §2.714a the Licensing Board's rulings admitting UCS and several other intervenors into the evidentiary proceeding. For reasons to be outlined below, we rule as follows:

- (1) PASNY's appeal of the Licensing Board's admission of intervenors is denied.
- (2) PASNY's petition for directed certification of its request for stay or dismissal is denied.
- (3) PASNY's petition for directed certification of its charges that the Licensing Board below has exceeded or misapplied its jurisdiction in admitting contentions is denied, because we provide the Board with further guidance on this matter.

B. Rulings on Admission of Intervenors

1. *Standing*

a. *UCS*

The Board ruled that UCS was entitled to intervene as a matter of right or, alternatively, as a matter of discretion. PASNY appeals this ruling pursuant to 10

² We have received letters from PASNY and UCS/NYPIRG, both dated July 19, 1982, but we have not entertained either letter.

³ In Part III we rule on a UCS/NYPIRG Motion for Reconsideration; in Part IV we rule on a request of the Village of Buchanan, N.Y.

CFR §2.714a, arguing that the Commission should reverse the Board and deny the UCS petition to intervene. In PASNY's view the Board should have granted intervention on neither ground. The NRC staff agrees with PASNY that UCS is not entitled to intervene as a matter of right, but unlike PASNY believes that discretionary intervention is warranted. Both the staff and PASNY, relying upon *Health Research Group v. Kennedy*, 82 F.R.D. 21 (D.D.C. 1979) (hereinafter *HRG*), urge the Commission to deny UCS intervention as a matter of right. According to the staff and PASNY, UCS lacks standing to intervene because it has "sponsors" rather than "members or their functional equivalents."

The Commission has not reviewed these arguments and thus does not reach a conclusion on the correctness of the Licensing Board's ruling on standing as a matter of right. The Commission does not have to reach this issue here. Under the circumstances of this case, the Commission agrees that discretionary intervention is warranted.

b. Rockland Citizens for Safe Energy (RCSE)

PASNY also appeals the Licensing Board's grant of RCSE's petition to intervene, arguing that RCSE failed to establish a nexus between itself and those it seeks to represent. PASNY advances this argument notwithstanding that RCSE provided the Licensing Board with evidence of two members living near the plant who authorized RCSE to represent their interests. We believe that the Board's ruling was correct.

c. Greater New York Council on Energy (GNYCE)

The Licensing Board granted the intervention petition of GNYCE in an Order of April 23, 1982. PASNY in a May 10, 1982 pleading incorporates by reference the standing arguments in its April 19, 1982 pleading. It appears to us that GNYCE is similarly situated to RCSE in that it provided evidence of an individual member near the plant who authorized GNYCE to represent him. That being so, we see no reason to disturb the Board's ruling on this ground.

2. *Intervenors' Views, Purposes, and Conduct*

PASNY argues, citing no legal authority whatsoever, that the views of certain intervenor groups on nuclear issues, as well as their conduct outside this proceeding, should preclude their participation in this proceeding. As the staff notes in its response to PASNY's argument, there is nothing in 10 CFR §2.714 or the caselaw interpreting that rule which permits licensing boards to exclude certain groups because of their opinions on nuclear power, either generally or as related to

specific plants. Staff Response of May 4, 1982, at 18. Likewise, there is no Commission rule prescribing the conduct of any party (other than licensees or others subject to our regulatory jurisdiction) outside our proceedings. PASNY's argument here is without merit.

3. *The Ability of the Intervenor Groups to Represent Their Members Adequately*

PASNY argues that the Licensing Board erred in granting the intervention petitions of New York Public Interest Research Group (NYPIRG), Westchester People's Action Coalition (WESPAC), and Friends of the Earth (FOE) because (1) the interests these groups seek to protect are not germane to the purposes of each group, and (2) their members' interests are too diverse for adequate representation by these groups. In support of these arguments PASNY relies primarily upon *Hunt v. Washington State Apple Advertising Commission*, 432 U.S. 333 (1977), *Associated General Contractors v. Otter Tail Power Co.*, 611 F.2d 684 (8th Cir. 1979), and *HRG, supra*.

As for the first argument — that the interests that FOE, WESPAC and NYPIRG seek to protect are not germane to the purposes of each — we agree with the staff (Brief at 20-21) that the record in the proceeding gives ample indication that the purposes of these organizations are substantially related to the subject of this litigation. Thus we reject PASNY's argument on this ground.

PASNY's second argument is that the interests of FOE, WESPAC and NYPIRG members are so diverse as to preclude adequate representation. The case most heavily relied upon by PASNY, *Associated General Contractors, supra*, is of little relevance to the present case. In *Associated General Contractors*, the court held that where the financial interests of a group of contractors was so diverse that the outcome of pending litigation would benefit some and harm others, a single association could not purport to represent the interests of all the members of the group. PASNY appears to argue that an organization which has wide ranging interests may not represent the interests of *all members* of the group. PASNY's brief fails to demonstrate that the wide ranging interests it lists will result in such a circumstance.

4. *The Board's Denial of PASNY's Request for an Evidentiary Hearing on Preliminary Matters*

PASNY asserts that the Board failed to carry out its duty of ensuring a fair and impartial hearing by refusing PASNY's request to conduct an evidentiary hearing regarding the practices and membership policies of the intervenor groups. PASNY relies upon *Consumers Power Co.* (Midland Plant, Units 1 and 2), LBP-78-27, 8

NRC 275 (1978) in making this argument, arguing that it has *bona fide* doubts regarding UCS membership and "Intervenor's scaremongering." As we have already disposed of PASNY's arguments as to conduct outside NRC proceedings and to UCS standing, we see no need for an evidentiary hearing on these matters. Indeed, such a hearing would no doubt detract from the possibility of an expeditious resolution of the questions we have asked of the Board.

For all of the above reasons, we see no reason to disturb the Licensing Board's rulings with regard to its grant of the petitions to intervene.

C. Stay or Dismissal

PASNY on April 22, 1982 asked us to exercise our discretion to take review pursuant to 10 CFR §2.718(i) of a March 29, 1982 Licensing Board order denying a PASNY motion for stay or dismissal of this proceeding. "Licensees' Motion for Directed Certification of Motion for a Stay of Commission's Orders of January 8, 1981 and September 18, 1981 or for Dismissal of this Proceeding or, In the Alternative, for Certification to the Commission" (hereinafter "Motion").

The essence of PASNY's motion for stay or dismissal of the proceeding appears to be its long-held position that the special proceeding should never have been instituted in the first place, and that it should be terminated as soon as possible. As the Licensing Board recognized, this argument and the principal supporting arguments have been articulated before, and we have rejected them before. Since the Commission has directed the institution of the proceeding, and has rejected requests that the proceeding be terminated, PASNY's assertion that the Licensing Board erred in refusing to stay or dismiss the proceeding (a course of action which, if adopted, would have constituted flagrant disregard of the Commission's directions to the Board) borders on the frivolous. We believe that at this point the interests of all concerned would best be served by the expeditious conduct of the proceeding.

D. Rulings on Contentions

On May 10, 1982 PASNY and Consolidated Edison (the latter was not a party to the other PASNY requests described above) asked us to review pursuant to 10 CFR §2.718(i) a Board order of April 23, 1982 ruling on contentions to be litigated in the adjudicatory proceeding. "Licensees' Petition for Directed Certification Pursuant to 10 CFR §2.718(i) and for Waiver of 10 CFR §9.103" (hereinafter "Petition"). The NRC staff supports licensees' petition ("NRC Staff Response to Support of [sic] Licensees' Request for Certification and for Waiver of 10 CFR §9.103," dated June 1, 1982), and UCS/NYPIRG oppose the petition ("UCS/NYPIRG Opposition to Licensees' Petition for Directed Certification of Issues

Arising from the Atomic Safety and Licensing Board's Order of April 23, 1982," dated May 25, 1982). We have an inherent supervisory power over the conduct of adjudicatory proceedings, including the authority to provide guidance on the admissibility of contentions before licensing boards. See *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), CLI-77-8, 5 NRC 563, 516-17 (1977); *United States Energy Research and Development Administration* (Clinch River Breeder Reactor Plant), CLI-76-13, 4 NRC 67, 75-76 (1976). In addition, because this is a special proceeding being held at the Commission's direction, we have an added responsibility to insure that our policies are clearly understood. The filings before us and, more importantly, our own review of the Board's opinion, convince us that exercise of our supervisory authority is warranted in this instance. In particular, we believe that guidance is needed on admissibility of issues, applicability of 10 CFR §2.758, and treatment of accident probability and consequences in testimony.

1. Admissibility of Issues

In our September 18, 1981 Order (CLI-81-23, 14 NRC 610), we provided guidance to the Board and the parties regarding admissibility of issues in the special proceeding and the application of 10 CFR §2.714. We stated that the Board would not be bound by 10 CFR §2.714 so that it could be "empowered only to accept and formulate, after consultation with the parties, those contentions which seem likely to be important to resolving the Commission's questions on pages 9-10, and thereby to assure that the proceeding remains clearly focused on the issues set forth in this Order." It has become clear to us that our instructions are not being applied by the Licensing Board. Our intent was not that the requirements of 10 CFR §2.714 be dispensed with or to encourage contentions challenging the Commission's regulations, but that *additional* requirements be applied to admission of contentions to assure a focused proceeding. In particular, we had in mind that the Board would, first, assure itself that proffered contentions included a statement of bases and that both the contentions and bases were stated with reasonable specificity, and second, further screen out those contentions which, while complying with §2.714, did not seem likely to be important in answering our questions. In this latter regard, we had in mind that the Board would itself redraft the contentions, screening out those issues which, in its judgment, would not contribute materially to the resolution of the Commission questions in light of the stated purpose of the proceeding, *i.e.*, the extent to which nearby population affects the risk posed by Indian Point as compared to the spectrum of risks posed by other nuclear power plants. In light of this purpose, the Board is expected to screen out those issues which, in its judgment, would make only a minor contribution to the Commission's goal, incommensurate with the time and resources required to address them.

Moreover, we intended some special considerations regarding admission of contentions under Question 2, which asks whether safety measures, in addition to those identified or referenced in the Director's February 11, 1980 Order, should be required. In addition to assuring compliance with 10 CFR §2.714 before admitting such contentions, the Board must make a threshold finding for each such contention whether "(a) there exists a significant risk to public health and safety, notwithstanding the Director's measures, and (b) the additional proposed measures would result in a significant reduction in that risk." This finding would be based on written material provided by the sponsor of the proposed measure.

2. *Applicability of 10 CFR §2.758*

In our September 18, 1981 Order, we did not address specifically the application of 10 CFR §2.758 which generally precludes litigation of rule challenges in adjudications. In its April 23, 1982 Order, however, the Licensing Board indicated that 10 CFR §2.758 would not apply to contentions related to the Commission's questions. The Licensing Board based this conclusion on footnote 4 of the Commission's September 18, 1981 Order. Order of April 23, 1982 at 904, note 2; Memorandum (To Clarify the Record) of April 27, 1982, at 2. The Licensing Board erred in its interpretation of this footnote and thus in its ruling on the applicability of Section 2.758 to the contentions in this proceeding. In light of the fact that application of Section 2.758 to this proceeding will help keep the proceeding focused on the Commission's questions, the Commission has decided to provide guidance.

We agree with the staff's formulation: "where the Commission intended that certain of its regulations be subject to challenge, it explicitly indicated this intent by framing questions which challenge the regulations." Staff Response of June 1, 1982, at 20. Under the Commission's questions, a challenge to the regulations should occur only to a limited extent, as described below.

The Commission expected that risk assessments submitted by parties in response to Question 1 might include elements not required by or addressed in the regulations since an assessment of risk is only indirectly related to the regulations. Thus, for example, an analysis prepared by a party might take into account protective actions not required by the NRC.

Question 2, to the extent the two-pronged test is met, permits contentions which argue for safety measures in addition to those presently required under the regulations.

Question 3 deals with compliance with Commission emergency planning regulations and supplemental NRC/FEMA emergency planning guidance. The question starts with an explicit reference to "the status and degree of conformance with NRC/FEMA guidelines." The Commission expected primarily a description

of plans and capabilities in response to this question, and did not contemplate a challenge to the Commission's regulations.

The Commission's regulations advise that,

generally, the plume exposure pathway EPZ for nuclear power plants shall consist of an area about 10 miles (16 km) in radius and the ingestion pathway EPZ shall consist of an area about 50 miles (80 km) in radius. The exact size and configuration of the EPZs surrounding a particular nuclear power reactor shall be determined in relation to local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries. 10 CFR §50.47(c)(2).

The Commission intended to address the plume exposure pathway EPZ in Question 3. That EPZ is to be about 10 miles. However, the exact size and configuration can be affected by local conditions. Under Question 3 the Board was to address whether the high population density posed by the two plants is such a local condition. *Cf.* 10 CFR Part 50, Appendix E, note 2.

Question 4 has two parts. First, the question asks what improvements in emergency planning can be expected in the near future and on what time schedule. In response to this part the Commission expected a description of plans and capabilities of the licensee and state and local governments. The second part deals with other "specific offsite emergency procedures that are feasible and should be taken to protect the public." Here we did have in mind the possibility that additional emergency planning measures, not required by NRC or FEMA, could be raised for Indian Point as prudent risk-reduction measures in light of the risk posed by Indian Point as opposed to the spectrum of risks posed by other nuclear plants. In this sense a "challenge" to NRC emergency planning regulations, as applied to Indian Point, was contemplated. However, parties must first provide a sound basis for this further exploration. This element is missing from the Board's orders.

Since Question 5 is "[b]ased on the foregoing," it does not provide an independent basis for a challenge to the regulations. Question 6 is once again descriptive, and Question 7 does not relate to the parties and the formulation of contentions.

3. Treatment of Accident Probability and Consequences in Testimony

In our September 8, 1981 Order we stated that "a description of a release scenario must include a discussion of the probability of such a release for the specific Indian Point plants." This direction (and the Commission discussions which the Board has used) made clear that this particular instruction was to govern the preparation and filing of parties' testimony. The Board has not so required, in direct contradiction to the Commission's direction. Any testimony on accident consequences for Indian Point must include a discussion of the probability of the

accidents leading to the proposed consequences. This discussion must be sufficient to convince the Board that the testimony addresses accidents that substantially contribute to overall risk. Testimony not meeting this test will not materially contribute to answers to the Commission's questions and should not be admitted.

We remand to the Board for expeditious reconsideration of its rulings as to the admissibility of all of the contentions admitted to the Special Proceeding. Additionally, we expect the Board to reformulate the contentions in accordance with this guidance. That includes the rejection of contentions previously admitted which do not fall within the scope of this proceeding as defined by the Commission.

III. UCS/NYPIRG PETITION FOR RECONSIDERATION

In our January 8, 1981 Memorandum and Order we observed that a satisfactory emergency plan for Indian Point was not then in place. 13 NRC at 3. On June 7, 1982 we received a "UCS/NYPIRG Motion for Reconsideration of Commission Ruling Allowing Interim Operation and for Issuance of a Show Cause Order Against the Licensees Prior to Commencement of the Evidentiary Hearing on the Safety of the Indian Point Nuclear Power Plants" (Motion). UCS/NYPIRG argue in their motion that new evidence concerning emergency planning for Indian Point warrants reconsideration of our earlier decision to allow the plant to continue operation pending the issuance of recommendations by the Licensing Board conducting the investigatory proceeding and our decision on those recommendations. UCS/NYPIRG request us to initiate a proceeding pursuant to 10 CFR §2.202 for the licensees to show cause why we should not revoke their licenses for failure to comply with our emergency planning rules.

If the UCS/NPIRG argument is a general challenge to emergency planning, then it should be referred to the staff to be dealt with pursuant to 10 CFR 2.206. If the issues are specifically tied to high population, then they should be cast in a form addressing the specific questions of the Commission Order.

IV. REQUEST BY THE VILLAGE OF BUCHANAN AS TO LOCATION OF HEARING

The Village of Buchanan, N. Y., on June 18, 1982 filed an "Emergency Petition for Directed Certification . . ." which asked us to order the Board to conduct its hearings inside the 10-mile EPZ. Licensing Boards have broad discretion to regulate the course of proceedings. *See* 10 CFR §2.718(e). We hesitate to overrule a board on a question left to its discretion unless there has been an abuse of its power. *See, e.g., Long Island Lighting Co. (Shoreham Nuclear Power Station), ALAB-39, 4 AEC 727 (1971)*. As we do not believe that the board has abused its

discretion in conducting the hearing eight miles outside the 10-mile EPZ, we deny the request.

The separate views of Chairman Palladino and Commissioners Gilinsky, Ahearne, and Asselstine are attached.

It is so ORDERED.⁴

For the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 27th day of July, 1982.

SEPARATE STATEMENT BY CHAIRMAN PALLADINO

I disagree with Commissioner Asselstine that the Commission's decision constitutes "an unnecessary, unwarranted and inappropriate interference . . . in the Board's conduct of this proceeding."

At least four Commissioners share a concern about the focus of the proceeding, and believe that changes are necessary.

I believe the Board will benefit from having a clear directive, rather than a more hortatory message, to reexamine the contentions already admitted. In the case of the two-pronged test for Question 2, I believe the reformulation is necessary if testimony is to be appropriately limited.

I also differ in that I do not agree the present guidance "goes beyond a fair reading" of our previous guidance (*i.e.*, I do not believe we have placed new restrictions on the Board). Our prior orders sought to have the Board concentrate on the significant, and the burden of the guidance in our decision today is to that end.

⁴ Commissioner Gilinsky was not present when this Order was affirmed, but had previously indicated his partial approval of this Order. Had Commissioner Gilinsky been present, he would have affirmed his prior vote.

SEPARATE VIEWS OF COMMISSIONER GILINSKY

I am in general agreement with the views expressed by Commissioner Asselstine regarding the admission of contentions to this proceeding.

ADDITIONAL VIEWS OF COMMISSIONER AHEARNE

Commissioner Ahearne notes that the Commission majority supporting this order consists of those members who drafted, negotiated, discussed and supported the Commission order that provided the final Commission guidance to the Board. Commissioner Asselstine was not a member of the Commission during this period.

SEPARATE OPINION OF COMMISSIONER ASSELSTINE, CONCURRING IN PART AND DISSENTING IN PART

Summary

I concur in sections I, II A, B and C, III and IV of the order issued by the Commission majority. However, for the reasons set forth in greater detail below, I strongly disagree with section II D of the Commission order — that portion of the order addressing the majority's rulings on contentions.

In my judgment, this portion of the majority's decision constitutes an unnecessary, unwarranted and inappropriate interference by the Commission in the Board's conduct of this proceeding. Although I have concerns regarding the lack of specificity in some of the contentions admitted by the Board, and although I agree with the majority that certain of these contentions *on their face* do not appear to adhere fully to the guidance provided by the Commission in its previous orders in this proceeding, I believe there are far preferable alternatives to the approach adopted by the majority to assure that this proceeding remains focused on the issues framed by the Commission.

In other instances, I believe that section II D of the majority order imposes *new* restrictions on the admission of contentions in this proceeding that go far beyond a fair reading of the guidance contained in the Commission's previous orders. These new restrictions, coming more than ten months after the Commission's last directions to the Board, some three months after the Board's order formulating contentions and more than a month after the start of the evidentiary hearing itself, are very likely, in my judgment, to lead to substantial disruption and delay in this proceeding. Moreover, I believe that the lack of flexibility in the restrictions on the

admission of contentions adopted by the majority may be incompatible with the investigatory nature of this special proceeding and may seriously limit the Board's ability to compile the information needed to address fully the issues specified in the Commission's previous orders in this proceeding. Finally, the new restrictions on the admissibility of contentions adopted by the majority will be perceived by the public — and in at least some instances, I believe, correctly so — as an effort by the Commission to change the rules of the proceeding in mid-stream in order to deny members of the public the opportunity to raise issues that were permissible under the Commission's previous orders and that have already been accepted by the Board. This perception cannot help but undermine public confidence in the thoroughness and objectivity of this proceeding, in the fundamental fairness of the Commission's adjudicatory proceedings in general, and in the safety of the facilities that are the subject of this investigatory proceeding.

For these reasons, I cannot agree to the majority's rulings on contentions in this order.

Discussion

With respect to the first question posed by the Commission, as modified by the Commission's September 18, 1981, order (CLI-81-23), the majority concludes that the Board has not followed the Commission's direction to consider accident probability as well as consequences. To address this concern, the majority directs the Board to require, as part of any testimony on accident consequences for Indian Point, a discussion of the probability of the accidents leading to the proposed consequences.

I agree that the Commission's September 18, 1981, order requires the Board, as part of its consideration of Question 1, to consider the probability as well as the consequences of release scenarios for the Indian Point plant. I believe that the Commission expected the Board to answer this element of the Commission's question based upon written and oral testimony and the Board's expert judgment. I also believe the Board's inherent supervisory authority over the conduct of the proceeding is sufficient to assure an adequate record on this aspect of the Commission's inquiry.

With respect to the second question posed by the Commission, as modified by the Commission's September 18, 1981, order, the majority requires that before admitting contentions addressing this question, the Board must make a threshold finding for each such contention, based upon written material submitted by the proponent of the contention, that "(a) there exists a significant risk to public health and safety, notwithstanding the Director's measures and (b) the additional proposed measures would result in a significant reduction in that risk."

I agree that the Commission's previous order required the application of this two-pronged test in considering contentions addressed to the Commission's

second question, and that the two contentions addressing Question 2 that were admitted by the Board's April 23, 1982, order do not on their face demonstrate application of the two-pronged test. However, I do not believe that it is necessary to require an evidentiary showing of compliance with the two-part test prior to the admission of contentions at this stage of the proceeding, *after* contentions have been admitted by the Board and *after* the hearing has begun. Rather, I believe that the Board has the inherent supervisory authority necessary to assure that both elements of the two-pronged test are addressed in testimony on the two admitted contentions relating to the second Commission question.

In addition, a number of the contentions admitted by the Board in its April 23, 1982, order are framed in very broad terms. I am concerned that the breadth of these issues may create difficulties for the parties in preparing and filing testimony and may lead to testimony that is overly general and conclusionary.

As is the case for my concerns regarding contentions related to the first and second Commission questions, discussed above, I believe that these concerns can be addressed by the use of the Board's inherent supervisory authority. In fact, the Board's April 23, 1982, order states the Board's intent to use this authority to ensure that the Commission's instructions to conduct a focused proceeding are carried out. For future hearing sessions, I believe the Board should adopt procedures that will enable the parties to more sharply focus on the issues at the evidentiary hearing. Such procedures would include reformulation and refinement of the contentions following discussion with the parties regarding their more specific concerns, use of summary disposition, and alteration of the sequence for filing of prepared testimony so that the proponent of a contention files first and others are given ample time to prepare written rebuttal testimony.

In my view, this authority, together with other existing authority of the Board, is sufficient to address each of these concerns regarding the contentions in this proceeding. I therefore would decline to exercise the Commission's supervisory power over the conduct of this proceeding. In particular, I strongly disagree with the *new* restrictions on the admissibility of contentions adopted by the majority.

The order issued by the majority imposes three new restrictions on the admissibility of contentions in this proceeding — restrictions that were not clearly specified in the Commission's previous orders in this proceeding. First, the majority requires that the Board apply 10 CFR section 2.714 at this late stage of the proceeding. Thus, the proponent of each contention will now be required to provide a statement of the bases for the contention in order for the contention to continue to be admitted. Second, the majority requires that the Board determine for each contention, prior to admitting the contention, whether the contention will contribute materially to the resolution of the Commission's questions and what time and resources will be required to address the contention. Third, the majority provides new, detailed directions to the Board on the extent to which the Board may accept contentions that include challenges to the Commission's regulations.

The majority itself acknowledges that this latter restriction was not addressed specifically in the Commission's previous orders in this proceeding. In particular, the majority's restrictions on permissible challenges to the Commission's regulations in contentions relating to the Commission's third question appear to represent a substantial narrowing of the scope of contentions that would otherwise be permissible under that question.

Taken together, these new restrictions on the admission of contentions constitute an unwarranted and unnecessary interference by the majority in the management of the proceeding. Particularly with respect to the directions regarding challenges to the Commission's regulations, the majority's restrictions go beyond a fair reading of the Commission's previous guidance in this proceeding and deny parties the opportunity to raise issues that would have been admissible under the Commission's previous orders. At a minimum, the majority's order will require, before this proceeding can go forward, the wholesale review of each of the contentions previously admitted by the Board and the submission of bases for each of these contentions. More than ten months have passed since the Commission's last directions to the Board on contentions in this proceeding. More than three months have passed since the Board issued its order establishing the contentions in this proceeding, and more than one month has passed since the commencement of evidentiary hearings. Testimony has been prepared by the parties, and in some cases has already been presented, based upon the contentions admitted by the Board. The imposition of the majority's new restrictions on the admission of contentions at this late date will likely lead to disruption and delay in the proceeding.

Moreover, the majority's new restrictions on the admissibility of contentions may well be inconsistent with the investigatory nature of this special proceeding. For example, regardless of the sufficiency of the bases for contentions in this proceeding, the questions raised by the Commission are to be answered. If in the Board's independent view the contentions serve to join issue on the Commission's questions, then the lack of bases for the contentions become of little importance. Inflexible restrictions on the admission of contentions such as those adopted by the majority may well serve to limit the Board's ability to obtain the information needed to address fully the questions raised by the Commission. In its April 23, 1982, order, the Board recognized both its responsibility to obtain the information needed to answer the Commission's questions and the Commission's instructions to conduct a proceeding focused on those questions. The Board, through its inherent supervisory powers, has the authority to carry out its responsibility and to assure a focused hearing, and is best able to make judgments on the formulation and admissibility of contentions consistent with those two objectives.

Finally, and perhaps most importantly, I believe that the majority's imposition of new restrictions on the admissibility of contentions at this late date will have

unfortunate consequences for the public perception of our adjudicatory proceedings in general and of this proceeding in particular. Specifically, the majority's restrictions will be perceived by the public — and in at least some instances, I believe, correctly so — as an effort by the Commission to change the rules of this proceeding in mid-stream in order to deny members of the public the opportunity to raise issues that were permissible under the Commission's previous orders. This perception cannot help but undermine public confidence in the thoroughness and objectivity of this proceeding, in the fundamental fairness of the Commission's adjudicatory proceedings in general, and in the safety of the facilities that are the subject of this investigatory proceeding.

For these reasons, I cannot agree to the majority's rulings on contentions in this order. Instead, having mentioned my concerns regarding the need for greater specificity in the present formulation of some contentions and for attention to the Commission's previous guidance regarding Questions 1 and 2, I would rely on the Board, using its supervisory powers, to conduct a focused proceeding that will provide the information needed to answer the Commission's questions. I am confident that the Board would use these powers wisely to meet those dual objectives. I also believe that this approach would avoid the unfortunate consequences I perceive in the majority's approach.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gillinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of

Docket No. 50-293
(EA-81-63)

BOSTON EDISON COMPANY
(Pilgrim Nuclear Power Station)

July 30, 1982

The Commission denies a petition by the Attorney General of Massachusetts for a hearing and intervention on an order of the NRC Office of Inspection and Enforcement modifying the operating license for this facility, on the ground that the petition presents concerns outside the scope of the proceeding.

ATOMIC ENERGY ACT: HEARINGS (ENFORCEMENT ACTION)

Section 189a of the Atomic Energy Act does not provide a non-discretionary right to a hearing on all issues arguably related to an acknowledged enforcement problem without regard to the scope of the enforcement action actually proposed or taken by the Commission. In order to obtain leave to intervene in an NRC proceeding, a petitioner must demonstrate an interest affected by the licensing action, as required by 10 CFR 2.714. *BPI v. Atomic Energy Commission*, 502 F.2d 424 (D.C. Cir. 1974).

ENFORCEMENT ACTIONS: SCOPE OF PROCEEDINGS

The Commission may limit the issues in enforcement proceedings to whether the facts as stated in the order are true and whether the remedy selected is supported

by those facts. *Public Service Co. of Indiana* (Marble Hill Nuclear Generating Station, Units 1 and 2), CLI-80-10, 11 NRC 438, 441-42 (1980).

ORDER

On January 18, 1982, the Office of Inspection and Enforcement issued an Order modifying the operating license for the Pilgrim Nuclear Power Station, a Boston Edison Company (BECO) facility in Plymouth, Massachusetts. The order provides that “[c]ontinued operation of the Pilgrim facility requires significant changes in Boston Edison Company’s control of licensed activities.” It requires the Company to develop and implement “a comprehensive plan of action that will yield an independent appraisal of site and corporate management organizations and functions, recommendations for improvements in management controls and oversight, and a review of previous safety-related activities to evaluate compliance with NRC requirements.” Order Modifying License Effective Immediately, Docket No. 50-293 (January 18, 1982) at 6, *printed at 47 Fed. Reg.* 4171 (January 28, 1982) (hereinafter, “Order”).

On February 17, 1982, the Attorney General for the Commonwealth of Massachusetts filed a Petition with the Commission seeking to intervene in a proceeding for modification of the Pilgrim operating license. In support of his petition, the Attorney General alleges a non-discretionary right to intervene in the proceeding, pursuant to section 189a of the Atomic Energy Act, prior to any further NRC action with respect to the January 18, 1982 order. For the reasons set forth below, we deny his request.

As a matter of law, section 189a does not provide a non-discretionary right to a hearing on all issues arguably related to an acknowledged enforcement problem without regard to the scope of the enforcement action actually proposed or taken. In order to be granted leave to intervene, one must demonstrate an interest affected by the action, as required by 10 CFR 2.714. *BPI v. Atomic Energy Commission*, 502 F.2d 424 (D.C. Cir. 1974). The scope of the action initiated by the Commission may be limited and defined by the Commission. The Commission may limit the issues in enforcement proceedings to whether the facts as stated in the order are true and whether the remedy selected is supported by those facts. *Public Service Company of Indiana* (Marble Hill Nuclear Generating Station, Units 1 and 2), CLI-80-10, 11 NRC 438, at 441-42 (1980).* The order in this case limits the scope

*In that order the Commission stated the legal and policy considerations in support of this view, 11 NRC 438, 441-42 [footnotes omitted]:

The reasons for this are simple. We believe that public health and safety is best served by concentrating inspection and enforcement resources on actual field inspections and related

(Continued)

of a proceeding in this way. It states that in a hearing the issue would be whether, on the basis of matters set forth in the Order, the Order should be sustained. Order at 9-10.

In this case, the Attorney General asserts four concerns with respect to the Order:

- (1) Without participating in the review of BECO's proposed corrective actions, the public can have no assurance that continued operation of the facility will not jeopardize their health and safety. Petition at 3;
- (2) If the NRC requires the wrong, or insufficient changes in BECO's management systems and controls, an existing threat to public health and safety will continue;
- (3) If NRC fails to require timely management changes this threat will continue; and
- (4) If BECO fails to properly implement necessary management changes this threat will continue indefinitely.

Attorney General's Brief at 5.

These concerns are beyond the scope of the proceeding. The Attorney General does not oppose the issuance of the Order nor does he raise in his petition or brief any suggestion that it is unsupported by the facts it sets forth. Indeed, far from disputing the facts set forth in the Order, the Attorney General recites them to show the need for NRC action. Attorney General's petition at 3. If anything, the Attorney General suggests that these facts not only support this Order but also support further NRC action. Consequently, the Attorney General is not entitled as of right to any formal hearing in the proceeding with respect to these concerns. Nor do we believe that, under the circumstances, a discretionary hearing should be held. *See Portland General Electric Co.* (Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610, 616 (1976). The NRC staff will give full and fair consideration to any of the Attorney General's expressed concerns regarding

scientific and engineering work, as opposed to the conduct of legal proceedings. This consideration calls for a policy that encourages licensees to consent to, rather than contest, enforcement actions. Such a policy would be thwarted if licensees which consented to enforcement actions were routinely subjected to formal proceedings possibly leading to more severe or different enforcement actions. Rather than consent and risk a hearing on whether more drastic relief was called for, licensees would, to protect their own interests, call for a hearing on each enforcement order to ensure that the possibility of less severe action would also be considered. The end result would be a major diversion of agency resources from project inspections and engineering investigations to the conduct of hearings. In our view cases such as *Moog Industries [v. FTC, 355 U.S. 411 (1958)]*, clearly permit an agency to adopt a policy which avoids such a result.

Finally, the NRC already provides a separate procedure, under 10 CFR 2.206, for any interested person to seek enforcement actions beyond those adopted. Furthermore, in appropriate cases enforcement orders may provide a broader scope, as has already been done in certain orders related to the Three Mile Island Nuclear Station. The order in this case, however, was limited to the issues noted above, and as such would not grant standing to parties seeking additional remedies.

future actions in this case, and we believe that this informal process will prove to be a satisfactory way of resolving those concerns. If for any reason the Attorney General believes his concerns have not received adequate attention or he desires more formal consideration of them, he may file a request for further enforcement action pursuant to 10 CFR 2.206. Should any Commission analysis or information in a 2.206 petition show that the NRC-ordered modification program has not been either sufficient to address the problems or properly responded to by the licensee, the licensee bears the risk of further action as appropriate. In this way, the Commission believes that the public health and safety has been properly and adequately protected by its actions.

The Attorney General's request for a hearing is therefore denied. Commissioner Gilinsky dissents and would grant the petition.**

It is so ORDERED.

For the Commission

JOHN C. HOYLE

Acting Secretary of the Commission

Dated at Washington, D.C.,
this 30th day of July, 1982.

**Commissioner Gilinsky was not present when this Order was affirmed, but had previously indicated his disapproval. Had Commissioner Gilinsky been present, he would have affirmed his prior vote.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gillinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of

Docket No. 50-322-OL

LONG ISLAND LIGHTING COMPANY
(Shoreham Nuclear Power Station,
Unit 1)

July 30, 1982

In response to a request by counsel for the applicant, the Commission directs that applicant's and intervenor's counsel be given access to those portions of the Appeal Board's opinion in the *Diablo Canyon* operating license (physical security) proceeding (ALAB-653) (Restricted) dealing with the definition of the design basis threat and the interpretation of the Commission's regulations regarding the appropriate number of armed responders, subject to the prior deletion of any classified information contained therein and the execution of appropriate non-disclosure affidavits. In response to a further request by intervenor's counsel for access by intervenor's consultants and for access to the entire *Diablo Canyon* security file, the Commission: (1) refers the request for access by intervenor's consultants to the Licensing Board with a direction to authorize access only upon a showing of need; and (2) denies access to the other portions of the opinion and the underlying record in the absence of a showing of need for such access.

ORDER

By letter dated July 25, 1982, Anthony F. Earley, counsel for applicant Long Island Lighting Company, requested that he and one other member of his law firm, T. S. Ellis, III, be given access to certain portions of the Appeal Board's opinion in the *Diablo Canyon* physical security proceeding, *Pacific Gas & Electric Company* (*Diablo Canyon Nuclear Power Plant, Units 1 and 2*), ALAB-653 (Restricted)

(1981), and the record supporting it. Specifically, Mr. Earley requested access to those portions of the opinion dealing with the definition of the design basis threat and the interpretation of the Commission's regulations regarding the appropriate number of armed responders.

By letter dated July 2, 1982, Herbert H. Brown, counsel for intervenor Suffolk County, agreed with Mr. Earley's request. Mr. Brown further requested that security experts for the parties be granted access, and that both the experts and counsel be granted access to the entire *Diablo Canyon* physical security file. Mr. Brown specifically requested that Michael S. Miller, an attorney, and Dr. Brian Jenkins and Marc Goldsmith, consultants, be granted access.

The Commission agrees that it would be senseless to litigate issues already decided by the Appeal Board without access to the Appeal Board's opinion. The Commission therefore directs that Mr. Earley, Mr. Ellis and Mr. Miller be given access to those portions of ALAB-653 dealing with the definition of the design basis threat and the interpretation of the Commission's regulations regarding the appropriate number of responders. This material is to be edited to delete any classified information contained therein and access is conditioned on these individuals signing new affidavits of non-disclosure applicable to Diablo Canyon physical security information and substantially similar to those used in the Diablo Canyon proceeding. The Commission denies the request for access to the entire opinion in the absence of any showing of need for access to other parts of the opinion. The Commission also denies the request for access to the underlying record as the Commission believes that the Appeal Board opinion itself will provide sufficient guidance.

Intervenor Suffolk County's request for access by its consultants is referred to the Licensing Board. Such access should be granted only if Suffolk County demonstrates the requisite need to know. 10 CFR 73.21(c)(vi). *See 46 Fed. Reg.* 51718, 51719-20 (October 22, 1981). PG&E is to be provided an opportunity to make a special appearance on the request if it so desires.

It is so ORDERED.*

For the Commission

JOHN C. HOYLE
Acting Secretary of the Commission

Dated at Washington, D.C.,
this 30th day of July, 1982.

*Commissioner Gilinsky was not present when this Order was affirmed, but had previously indicated his disapproval. Had Commissioner Gilinsky been present he would have affirmed his prior vote.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gillinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of

Docket No. 50-255-SP

CONSUMERS POWER COMPANY
(Palisades Nuclear Power Facility)

July 30, 1982

The Commission vacates on grounds of mootness the Appeal Board's and the Licensing Board's earlier decisions (ALAB-670, 15 NRC 493 (1982); LBP-81-26, 14 NRC 247 (1981)) concerning the holding of a hearing on a confirmatory order by the Director of the Office of Inspection and Enforcement restricting licensed operator overtime work at Palisades.

RULES OF PRACTICE: MOOTNESS

Under established NRC practice, unreviewed judgments are vacated when their appellate review becomes unavailable because of mootness. *See, e.g., Boston Edison Company* (Pilgrim Nuclear Power Station, Unit 2), ALAB-656, 14 NRC 965 (1981); *Rochester Gas & Electric Corp.* (Sterling Power Project, Nuclear Unit No. 1), ALAB-596, 11 NRC 867 (1980).

MEMORANDUM AND ORDER

On March 9, 1981 the Director of the Office of Inspection and Enforcement issued a confirmatory order to improve the licensee's performance at the Palisades

plant. 46 *Fed. Reg.* 17688 (March 19, 1981). That order, to which the licensee consented, in part restricted overtime for licensed operators at the Palisades Facility to a greater degree than the NRC's generally applicable limitations. The Utility Workers Union of America and the Michigan State Utility Workers Council (Union) requested a hearing on the overtime restrictions imposed by the order.

The Commission referred the Union's request for a hearing to the Atomic Safety and Licensing Board. Unpublished Order of May 29, 1981. On July 31, 1981 the Licensing Board denied the request for a hearing. The Licensing Board found that the Union lacked standing entitling it to a hearing as of right, that the Commission's referral order had precluded the Board from granting a discretionary hearing and that the criteria for a discretionary hearing had not been satisfied. *Consumers Power Company* (Palisades Nuclear Power Facility), LBP-81-26, 14 NRC 247 (1981).

The Appeal Board reversed the Licensing Board on March 31, 1982. The Appeal Board found that the Commission had not barred consideration of a discretionary hearing, and that the criteria for a discretionary hearing had been satisfied. *Consumers Power Company* (Palisades Nuclear Power Facility), ALAB-670, 15 NRC 493 (1982).

Subsequently, the NRC staff and the Union settled their disagreement over allowable overtime, and on May 11, 1982, the NRC staff and the Union filed a "Joint Motion to Terminate Proceeding." That motion stated that on April 21, 1982 the NRC Administrator of Region III had issued a "Partial Recission of Order" modifying the overtime restrictions in the March 9 Director's Order to comply with the normal Commission policy on overtime, and that the Union had withdrawn its request for a hearing. On May 28, 1982 the Licensing Board granted the motion to terminate the proceeding after finding that the settlement and "Partial Recission of Order" were fair and reasonable.

Thus, this proceeding is now moot. Under established NRC practice, unreviewed judgments are vacated when their appellate review becomes unavailable because of mootness. *See, e.g., Boston Edison Company* (Pilgrim Nuclear Power Station, Unit 2), ALAB-656, 14 NRC 965 (1981); *Rochester Gas and Electric Corporation* (Sterling Power Project, Nuclear Unit No. 1), ALAB-596, 11 NRC 867 (1980). *See also, e.g., A. L. Mechling Barge Lines, Inc. v. United States*, 368 U.S. 324 (1961); *United States v. Munsingwear, Inc.*, 340 U.S. 36 (1950). Accordingly, we hereby vacate both the Licensing Board decision, LBP-81-26,

and Appeal Board decision, ALAB-670. These decisions also should not be used for guidance.

It is so ORDERED.*

For the Commission

JOHN C. HOYLE
Acting Secretary of the Commission

Dated at Washington, D.C.,
the 30th day of July, 1982.

*Commissioner Gilinsky was not present when this Order was affirmed, but had previously indicated his approval. Had Commissioner Gilinsky been present he would have affirmed his prior vote.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gilinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of

Docket Nos. 50-275-OL
50-323-OL
(Physical Security)

PACIFIC GAS AND ELECTRIC COMPANY
(Diablo Canyon Nuclear Power
Plant, Units 1 and 2)

July 30, 1982

In response to a motion by the representative of an interested state requesting that portions of ALAB-653 (Restricted) and his petition for review of that decision which do not contain protected information be made public, the Commission releases versions of both documents with all protected information deleted. The Commission determines that the meaning of "several" as used in the design basis threat of 10 CFR 73.1(a)(1) is safeguards information under Section 147 of the Atomic Energy Act.

ORDER

On October 13, 1981 Governor Brown filed a motion with the Commission requesting that those parts of ALAB-653 and his Petition for Review which do not contain "protected information" be made public. The Commission is hereby releasing a version of Governor Brown's Petition for Review and the following version of ALAB-653 with all protected information deleted. In this regard, the

Commission has determined that the meaning of "several" as used in the design basis threat of 10 CFR 73.1(a)(1) is safeguards information under Section 147 of the Atomic Energy Act.

It is so ORDERED.*

For the Commission

JOHN C. HOYLE

Acting Secretary of the Commission

Dated at Washington, D.C.,
this 30th day of July, 1982.

*Commissioner Gilinsky was not present when this Order was affirmed, but had previously indicated his approval. Had Commissioner Gilinsky been present he would have affirmed his prior vote.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Thomas S. Moore, Chairman
Dr. W. Reed Johnson

In the Matter of

Docket Nos. 50-275-OL
50-323-OL

PACIFIC GAS AND ELECTRIC COMPANY
(Diablo Canyon Nuclear Power Plant,
Units 1 and 2)

September 9, 1981

APPEARANCES

Messrs. Bruce Norton and Arthur C. Gehr, Phoenix, Arizona, and Malcolm H. Furbush and Philip A. Crane, Jr., San Francisco, California, for the applicant, Pacific Gas and Electric Company.

Messrs. Herbert H. Brown, Lawrence C. Lanpher and Christopher B. Hanback, Washington, D.C., and Byron S. Georgiou, Sacramento, California, for Governor Edmund Brown, Jr. of the State of California.

Messrs. Harry M. Willis and W. Andrew Baldwin, San Francisco, California, for the intervenor, San Luis Obispo Mothers for Peace.

Messrs. William J. Olmstead and Charles Barth and Mrs. Lucinda Low Swartz for the Nuclear Regulatory Commission staff.

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DECISION

This decision contains our findings of fact and conclusions of law on the contested security plan issues in the Diablo Canyon operating license proceeding. As such, the decision necessarily contains numerous details of the facility security plan. Consequently, the decision, like the security plan and *in camera* hearing transcripts, must be treated as protected information. It may not be publicly disclosed. The decision will be made available to counsel for the Governor of California and intervenor San Luis Obispo Mothers for Peace who previously executed affidavits of non-disclosure. It will be placed in the secure facilities provided by the NRC staff and applicant for examination of protected information.

I. PROCEDURAL HISTORY

In ALAB-580¹ we overturned the Licensing Board's finding that the security plan for the applicant's two-unit Diablo Canyon nuclear facility complied with the Commission's regulations.² We did this after discovering that the security plan was not part of the hearing record below and ascertaining from the Licensing Board's response³ to our inquiry⁴ that it had never looked at the Diablo Canyon security plan. These circumstances, combined with the sparsity of the hearing record on the adequacy of the plan, led us to conclude that the Licensing Board's finding was "so much waste ink" because "[n]o conceivable good is served by making empty findings in the absence of essential evidence." 11 NRC at 230. We then vacated the security plan portion of the Board's partial initial decision and announced that we would consider the adequacy of the applicant's security plan *de novo*. 11 NRC at 231.

The San Luis Obispo Mothers for Peace (SLOMFP) was allowed to participate as an intervenor in accordance with the terms of ALAB-410⁵ where, over two years before, we outlined the strictures for litigating the adequacy of applicant's security plan. Similarly, we permitted the Governor of the State of California to participate as the representative of an interested state.⁶ After resolving all disputes over the

¹ *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-580, 11 NRC 227 (1980).

² See *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-79-26, 10 NRC 453, 507 (1979).

³ See Licensing Board memorandum dated February 11, 1980 (unpublished).

⁴ See our memorandum of February 6, 1980 (unpublished).

⁵ *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-410, 5 NRC 1398, *review denied*, CLI-77-23, 6 NRC 455 (1977).

⁶ See *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Plant, Units 1 and 2), ALAB-600, 12 NRC 3, 8 (1980).

scope and content of the affidavit of non-disclosure incorporated into our protective order,⁷ we granted counsel for intervenor and Governor Brown (and their respective qualified expert witnesses) access to applicant's security plan.⁸ The intervenor filed amended contentions and Governor Brown filed a statement of issues on which he wished to participate. We entertained objections to the intervenor's contentions and Governor Brown's statement of issues and recast those that we accepted — plus two matters raised *sua sponte* — into ten consolidated issues.⁹ Upon completion of discovery,¹⁰ all parties prefiled their direct testimony. We then overruled intervenor's objection to holding the security hearing on applicant's premises¹¹ and, beginning November 10, 1980, we held six days of *in camera* hearings at the applicant's headquarters in San Francisco, California. After the close of the hearing, all parties filed proposed findings of fact and conclusions of law.¹²

II. REGULATORY SCHEME FOR PHYSICAL PROTECTION OF COMMERCIAL REACTORS

Section 73.55 of the Commission's regulations¹³ sets forth the physical protection requirements for safeguarding commercial nuclear power reactors against "radiological sabotage." This term is defined as a deliberate act against a plant or plant component which could directly or indirectly endanger the public health and safety by exposure to radiation.¹⁴ Rather than providing a blueprint for an entire security system, the Commission's regulations propound an overall general performance objective and a design basis threat which the physical protection system must be designed to meet. The regulations then address the component parts of a

⁷ See First Prehearing Conference Order dated February 25, 1980, at 4-5 (unpublished); *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Plant, Units 1 and 2), ALAB-592, 11 NRC 746, 748-49, *modified and remanded*, CLI-80-24, 11 NRC 775, *on remand*, ALAB-600, 12 NRC 3, 4-7 (1980); Third Prehearing Conference Order dated August 4, 1980 at 3-4 (unpublished).

⁸ See ALAB-592, *supra*, 11 NRC at 751-756; ALAB-600, *supra*, 11 NRC at 9-13; Third Prehearing Conference Order dated August 4, 1980 at 4-6 (unpublished); Fourth Prehearing Conference Order dated August 8, 1980 at 2-4 (unpublished).

⁹ See Order Ruling on Contentions dated September 18, 1980 (unpublished); see also Order dated November 4, 1980 (unpublished).

¹⁰ See Order Ruling on Discovery Motions dated October 10, 1980 at 4-24 (unpublished); Order dated October 17, 1980 (2 pp., unpublished).

¹¹ See Order dated October 17, 1980 at 5-13 (13 pp., unpublished), *review denied*, Order of the Commission dated November 6, 1980 (unpublished).

¹² We subsequently ruled on a motion regarding compliance with the terms of our protective order. See Memorandum and Order dated December 30, 1980 (sealed and unpublished); *aff'd on review by Commission sua sponte*, Commission order dated February 20, 1980 (unpublished, with edited version of our December 30, 1980 memorandum and order attached).

¹³ 10 CFR §73.55.

¹⁴ 10 CFR §73.2(p). The off-site doses set forth in 10 CFR §100.11 are the Commission's reference values for determining radiation exposures in emergencies which endanger the public health and safety.

security system and prescribe more specific requirements for each system subpart. The flexibility of this regulatory scheme allows each applicant considerable latitude in designing a safeguards system to protect its nuclear power facility from radiological sabotage.

Section 73.55(a) mandates that a reactor security system be planned so as to protect against the "design basis threat of radiological sabotage." That malevolent threat is defined in Section 73.1(a)(1) as:

- (i) A determined violent external assault, attack by stealth, or deceptive actions, of several persons with the following attributes, assistance and equipment: (A) Well-trained (including military training and skills) and dedicated individuals, (B) inside assistance which may include a knowledgeable individual who attempts to participate in a passive role (*e.g.*, provide information), an active role (*e.g.*, facilitate entrance and exit, disable alarms and communications, participate in violent attack), or both, (C) suitable weapons, up to and including hand-held automatic weapons, equipped with silencers and having effective long-range accuracy, (D) hand-carried equipment, including incapacitating agents and explosives for use as tools of entry or for otherwise destroying reactor, facility, transporter, or container integrity or features of the safeguards system, and
- (ii) An internal threat of an insider, including an employee (in any position).

The general performance objective is also stated in Section 73.55(a) and requires that the reactor security system provide "high assurance that activities involving special nuclear material are not inimical to the common defense and security, and do not constitute an unreasonable risk to the public health and safety."¹⁵ Although nowhere defined, the "high assurance" objective "is deemed to be comparable to the degree of assurance contemplated by the Commission in its safety review for protection against severe postulated accidents having potential consequences similar to the potential consequences from reactor sabotage."¹⁶ Under the regulatory scheme, the general performance objective is generally satisfied once the detailed requirements for the various components of a security system set forth in Sections 73.55(b)-(h) are met. However, the regulations recognize that there may be special circumstances which lead the Commission to impose additional security measures so that a particular system meets the general performance objective. In addition, the regulations permit the use of security

¹⁵ The regulations define special nuclear material of low strategic significance to encompass power reactor fuel: "10,000 grams or more of uranium-235 contained in uranium enriched above natural but less than 10 percent in the U-235 isotope." 10 CFR §73.2(y).

¹⁶ 44 *Fed. Reg.* 68184, 68185 (November 28, 1979).

measures other than those precisely meeting the requirements of Sections 73.55(b)-(h) if such measures provide equivalent protection.¹⁷

The specific requirements for the six subparts of a security system are spelled out in Sections 73.55(b)-(g). Subsection (b) directs the licensee to establish a security organization — including armed guards who must be trained, equipped, qualified and annually requalified — and a management system which must develop, implement and enforce all necessary security procedures. Subsection (c) dictates that the safeguards system incorporate various physical barriers, zones and lighting requirements to aid in detecting, delaying and resisting unauthorized entry into the facility. Subsection (d) spells out the various requirements for controlling access to the facility and for identifying and evaluating personnel and physical items moving into the facility as well as moving from one area to another within the facility.

The requirements for detecting unauthorized intrusions into the facility are outlined in subsection (e). Among other things, this part requires that all alarm equipment be self checking and tamper indicating and that alarms annunciate in two continuously manned alarm stations indicating the type and location of the alarm. The communication requirements of subsection (f) direct that all facility guards have the capability of continuous communication with both alarm stations and that the alarm stations have conventional telephone as well as backup emergency powered two-way radio or microwave voice communication with local law enforcement authorities. Subsection (g) establishes the testing and maintenance schedules for the various system components and mandates an annual independent security audit of the safeguards system.

Finally, subsection (h) details certain responsibilities of the security organization: to execute a contingency plan; to establish a liaison with local law enforcement agencies; to provide that ten armed and trained security personnel shall be available at all times to respond to safeguard incidents unless the Commission determines otherwise (but that number may never be reduced to less than 5 guards); and, to assure that in the event of a security emergency, the threat be effectively assessed and then neutralized by the deployment of armed response personnel between vital areas and the intruders.

III. THE DESIGN BASIS THREAT

A. Size of the External Assault Force

Because a number of the contested issues before us challenge the adequacy of various aspects of the applicant's security plan to protect against the design basis

¹⁷ 10 CFR §73.55(a). See 42 *Fed. Reg.* 10836 (February 24, 1977).

threat of Section 73.1(a)(1), many of our findings are to some extent dependent on the numerical size of the external malevolent force characterized in the design basis threat by the words "several persons."¹⁸ We must initially confront this legal question, which the parties briefed fully, before resolving the contested issues.

1. The parties disagree on how the word "several" should be construed. In essence, Governor Brown and SLOMFP contend that the Commission intended the word to be an indefinite term without any specific numerical limitation. They argue that their interpretation would permit site specific flexibility in designing reactor protection systems for the threats associated with each particular facility. They further argue that here the record establishes that the likely threat to Diablo Canyon is up to twelve attackers, a number which they believe is encompassed by the term "several." The staff and applicant, on the other hand, assert that the Commission intended the "several persons" of the design basis threat uniformly to denote a maximum threat of [†]* attackers.

Governor Brown asserts that we must reject the position of the staff and applicant as contrary to the plain meaning of "several" which, by dictionary definition, is an indefinite term. He contends that a limiting meaning can be considered only if the regulation is ambiguous; since it is not, the customary meaning controls and no interpretation of the regulatory language is permissible. Br. at 9-10. The Governor also points to several congressional hearings¹⁹ as well as agency reports and studies to support his contention that, in response to a general concern that existing security was inadequate, the Commission adopted Section 73.55 to upgrade reactor protection. He then argues it would be anomalous for the Commission to have reduced the size of the threat to only [†] attackers when, during the pendency of the reactor security rulemaking, the agency staff reviewed the adequacy of licensee security plans under guidelines²⁰ employing a larger threat. Br. at 4-6; 11. Finally, Governor Brown relies on the press conference remarks and congressional testimony²¹ of two senior staff members to argue that the Commission intended to create an indefinite design basis threat in the reactor security rule. Br. at 6-9.

¹⁸ See p. 59, *supra*.

¹⁹ See Subcommittee on Energy and the Environment of the House Committee on Interior and Insular Affairs, 94th Congress., 2d Sess., Safeguards in the Domestic Nuclear Industry (Committee Print No. 17, 1976); Oversight Hearings on Nuclear Energy — Safeguards in the Domestic Nuclear Industry Before the Subcommittee on Energy and the Environment of the House Committee on Interior and Insular Affairs, 94th Congress, 2d Sess. (1976).

*The symbol [†] indicates that Safeguards Information has been deleted by the Commission from the text. See 10 CFR §73.21. A single symbol is used regardless of whether a word, a phrase, a sentence or whole paragraphs or pages have been excised from the text.

²⁰ In this regard Governor Brown relies on Regulatory Guide 1.17, "Protection of Nuclear Power Plants Against Industrial Sabotage" (June 1973) and Regulatory Guide 5.43, "Plant Security Force Duties" (January 1975).

²¹ See Oversight Hearings on Nuclear Reactor Security Against Sabotage Before the Subcommittee on Energy and the Environment of the House Committee on Interior and Insular Affairs, 95th Cong., 1st Sess. (1977) (statement of Edson G. Case).

The staff primarily relies on four internal agency memoranda to support its position that the Commission intended the design basis threat of "several persons" to be limited to no more than [†] attackers. These memoranda purport to document the development of the final reactor physical protection regulation after the publication for comment of a proposed rule.²² Indeed, the staff concedes in its brief, as it did at the hearing, that it used only this interpretation of the regulation in its review of the Diablo Canyon security plan. Br. at 8. The staff supports its argument by comparing the external attack component of the design basis threats applicable to commercial power reactors²³ and fuel cycle facilities.²⁴ The threats are identical except the Commission characterized the threat for the theft or diversion of special nuclear material as "a small group" with "the ability to operate as two or more teams";²⁵ and the staff asserts that the omission of the team criteria from the threat for commercial reactors indicates that the Commission intended "several persons" to be a number [†] — the minimum number which can act as two teams. Br. at 7.²⁶

2. As its delegate, our task is to ascertain the Commission's intent when it used in the regulation the words "several persons" to characterize the size of the design basis threat. We are not free to interject our preference as if we were the regulation's author. But we are not constrained by a purported canon of construction to close our eyes to relevant administrative history, as Governor Brown advocates. Br. at 9-10. As the Supreme Court has warned,

words are inexact tools at best and for that reason there is wisely no rule of law forbidding resort to explanatory legislative history no matter how "clear the words may appear on 'superficial examination' ".²⁷

Therefore we must look to the entire regulation, its subsequent amendments and any other relevant regulatory history to discern the Commission's meaning. Here, as we shall see, the available aids to construction overwhelmingly support a limiting definition of the word "several." We are persuaded that the Commission intended the design basis threat in Section 73.1(a)(1) to constitute a maximum of [†] attackers.

In 1974 the Commission published for comment a proposed rule to amend its regulations for the physical protection of reactors.²⁸ At that time, the regulations required reactor licensees to submit to the agency security plans for protection

²² The contents of these staff documents are discussed at pp. 65-69, *infra*.

²³ See 10 CFR §73.1(a)(1).

²⁴ See 10 CFR §73.1(a)(2).

²⁵ *Id.*

²⁶ Applicant's arguments follow the same course as the staff's, and SLOMFP's are merely a rebuttal of applicant's arguments.

²⁷ *Harrison v. Northern Trust Co.*, 317 U.S. 476, 479 (1943), quoting *United States v. American Trucking Ass'n.*, 310 U.S. 534, 544 (1940). See also *United States v. Culbert*, 435 U.S. 371 (1978); *Cass v. United States*, 417 U.S. 72 (1974).

²⁸ 39 *Fed Reg.* 40038 (November 13, 1974).

against industrial sabotage.²⁹ But the regulations did not specify any criteria or requirements for reactor security systems. Rather, the agency staff provided general direction in the form of regulatory guides and imposed specific requirements on an ad hoc basis as license conditions.³⁰ The Commission's proposed rule sought to add a new section 73.55 to the regulations specifying detailed requirements for nuclear power reactor security systems and security organizations. But the proposed rule did not specify any level of performance that the protection system would have to achieve.

The Commission added the performance requirement or design basis threat in response to rulemaking comments. These comments indicated that a general performance requirement would aid in the implementation of the rule by explicitly indicating the level of protection required.³¹ And, in its statement of considerations accompanying the final rule published in 1977, the Commission identified its reasons for adopting the threat, with its particular attributes and characteristics, set forth in the regulation:

On the basis of intelligence and other relevant information available to the NRC there are no known groups in this country having the combination of motivation, skill, and resources to attack either a fuel facility or a nuclear power reactor. In addition, studies have indicated that the generic characteristics (*i.e.*, the "defense-in-depth" concept of reactor plant design) of commercial power reactors make the releasing of radioactivity by acts of sabotage difficult. Furthermore, the potential consequences of a reactor sabotage are judged to be less than the extreme consequences which could be associated with the successful detonation of an illicit nuclear explosive device. Having considered these factors, the Commission has concluded that the level of protection specified in §73.55 is adequate and prudent at this time. The kind and degree of threat and the vulnerabilities to such threats will continue to be reviewed by the Commission. Should such reviews show changes that would dictate different levels of protection the Commission would consider changes to meet the changed conditions.³²

The Commission's explanation for choosing the design basis threat of section 73.1(a)(1) is directly contrary to Governor Brown's contention that the "several persons" characterization of the size of the threat was intended to be an indefinite term (*i.e.*, connoting a sliding scale) meant to ensure flexibility in designing reactor security systems for the site-specific threats associated with each particular facility. Rather than directing each licensee to assess the potential local threat to its facility, as Governor Brown suggests, the Commission made a generic assessment

²⁹ See 10 CFR §§50.34(c) and 73.40 (1974).

³⁰ See 10 CFR §50.34(c)(1974). See also Regulatory Guide 1.17, "Protection of Nuclear Power Plants Against Industrial Sabotage" (June 1973) and p. 83, *infra*.

³¹ See 42 *Fed. Reg.* 10836 (February 24, 1977).

³² *Id.*

of the potential for radiological sabotage of commercial power reactors. On the basis of intelligence reports regarding the domestic threat, the technical difficulty of successfully sabotaging a power reactor, and the possible consequences of a successful sabotage effort, the Commission adopted a design basis threat positing “several” attackers. Moreover, the Commission reserved to itself—not individual licensees—the responsibility for monitoring the continuing validity of the design basis threat and amending the “kind and degree of threat” if future circumstances so warranted.

Confirmation that the “several persons” language of the design basis threat did not impose a site specific intelligence gathering and assessment responsibility on licensees is provided by the Commission’s 1978 amendment to Section 73.55(h)(1) of the reactor security regulations.³³ That Section directs licensees to execute “safeguards contingency plans” in accordance with the criteria set out in Appendix C to Part 73. Among other things, Appendix C requires that the contingency plan contain a statement of the “perceived danger” to the licensee’s facility.³⁴ That requirement in the proposed amendment³⁵ prompted several industry complaints that the perceived danger to power reactors was within the purview of the Commission, and that requiring licensees to theorize about the threat would be a drain on their resources.³⁶ The Commission agreed and clarified³⁷ Appendix C by adding: “The statement of perceived danger should conform with that promulgated by the Nuclear Regulatory Commission. (The statement contained in 10 CFR 73.55(a) [*i.e.*, the design basis threat] or subsequent Commission statements will suffice.)”³⁸ In its statement of considerations accompanying the amended rule, the Commission reiterated that “the licensee should examine his facility or operation to determine its vulnerability in light of the adversary characteristics postulated by the Commission.”³⁹ This Commission action, taken in response to comments that threat assessment was within the Commission’s province, directly contradicts Governor Brown’s argument that the Commission intended the size of the malevolent force in the design basis threat to be read “without a definite numerical limitation” so as to “ensure site-specific flexibility in designing security systems for the threats associated with each particular facility.” Br. at 10.

In addition to establishing a generic threat as a design basis, the history of Section 73.55 also convincingly demonstrates that the Commission intended the size of the adversarial force to be numerically limited to [†] attackers. Staff

³³ 43 *Fed. Reg.* 11962, 11965 (March 23, 1978).

³⁴ 10 CFR Part 73, Appendix C, Section 1.a.

³⁵ See 42 *Fed. Reg.* 25744, 25747 (May 19, 1977).

³⁶ See 43 *Fed. Reg.* 11962, 11963 (March 23, 1978).

³⁷ *Id.* at 11962.

³⁸ *Id.* at 11966.

³⁹ *Id.* at 11963.

Exhibits S-8 through S-11⁴⁰ chronicle the “several persons” language of the final reactor security rule and therefore deserve special attention. They consist of intra-agency memoranda and the staff introduced them without objection from any party. Tr. 1919.

Following publication of the proposed rule in 1974, the staff presented to the Commission in late 1976 a draft of a final rule containing a general performance requirement. That draft of Section 73.55 contained a design basis threat stating, *inter alia*, “(1) an external threat of [†] well-trained persons armed with pistols, shotguns, or rifles (including semi-automatic weapons), and who may be assisted by an insider (employee or unescorted person). . . .”⁴¹

Accompanying the draft rule was a cover memorandum to the Commission from the Director of the Office of Standards Development. The Director noted that, in response to the Commission’s June 1976 instructions, the staff had re-evaluated the provisions of the draft rule to determine whether they were adequate and cost effective. To do this, the staff solicited comments from two industry groups and then met with those groups to discuss the rule.⁴² The staff also formed a task force to inspect existing security systems at a representative sample of operating reactors in order to determine whether the draft rule would be effective in protecting against acts of sabotage by “(1) a small external group [†], armed with legal weapons, with the possible assistance of a plant employee. . . .”⁴³ After performing inspections at six sites containing nine reactors, the task force concluded that the draft rule would provide “substantial protection against an ‘external threat (several

⁴⁰ The staff exhibits consist of the following:

Staff Exhibit S-8: SECY-76-242C, “Physical Protection of Nuclear Power Reactors Against Industrial Sabotage; Amendments to 10 CFR Parts 50 and 73,” dated October 7, 1976, to the Commissioners, from Robert B. Minogue, Director, Office of Standards Development. Enclosure A — Refined Draft Effective Rule; Enclosure B — Summary of Significant Comments; Enclosure C — Draft Public Announcement; Enclosure D — Response to OGC Comments; Enclosure E — Response to OPE Comments.

Staff Exhibit S-9: Memorandum for Lee V. Gossick, Executive Director for Operations, and Peter Strauss, General Counsel, from Samuel J. Chilk, Secretary, “Staff Requirements — Policy Session 76-55, 9:25 A.M., Tuesday, December 14, 1976, Commissioners’ Conference Room, D.C. Office,” dated December 17, 1976 (Revised December 23, 1976).

Staff Exhibit S-10: Memorandum for Commissioners Rowden, Gilinsky and Kennedy from Ben C. Rusche, Director, Office of Nuclear Reactor Regulation, “Design Basis Threat Information/Response Force Requirements (§73.55),” dated February 2, 1977. Enclosure 1 — Staff Report on Response Force Requirements; Enclosure 2 — Proposed Changes to §73.55.

Staff Exhibit S-11: Memorandum for Lee V. Gossick, Executive Director for Operations, from Samuel J. Chilk, Secretary, “Reactor Physical Protection Rule (New Part 73.55),” dated February 11, 1977. Enclosure 1 — Detailed Comments on 73.55.

⁴¹ Staff Ex. S-8, Enclosure A, p. 14.

The staff’s draft of the statement of considerations accompanying the draft rule indicated that the general performance requirement was “stated in terms of specified threats” which “will be subject to continuing review by the “Commission” but “the level of protection required in §73.55 is based on a current assessment of its adequacy and achievability.” *Id.* at 3.

⁴² The industry was apparently concerned that the “level of protection should be stabilized now to avoid future backfit.” Staff Ex. S-8, Enclosure B, p. 4.

⁴³ Staff Ex. S-8, SECY-76-242C, p. 2.

individuals armed with legal weapons with possible minimal assistance from a plant employee). . . .”⁴⁴ According to the Director, the staff’s reassessment of the draft rule resulted in the addition of the general performance requirement,⁴⁵ which he recommended that the Commission adopt. The Director specifically cautioned, however, that publication of the specific threat level contained in the staff’s draft would be “tantamount to deciding such information is not classified.”⁴⁶

The Commission took up the staff’s proposal on December 14, 1976 and “agreed in principle” with it.⁴⁷ Indeed, the Commission rearranged and expanded the description of the attributes of the attackers in the design basis threat from that contained in the staff draft but did not change the numerical threat level of [†].⁴⁸ Moreover, in order to emphasize the point, the Commission directed the staff to expand the discussion on the agency’s commitment continually to review the design basis threat contained in the staff’s draft statement of considerations.⁴⁹

When the staff returned the modified rule to the Commission for final consideration, the Directors of the Office of Nuclear Reactor Regulation and the Office of Nuclear Material Safety and Safeguards proposed that the Commission “partially or completely withhold [the] detailed design basis threat definition” from the rule.⁵⁰ According to the Directors’ memorandum to the Commissioners, denomination of a specific threat level in the rule raised two issues which the staff now sought to avoid. The first, which the Directors stated had “become all too evident during recent Commission/staff discussions concerning the proposed §73.55,” was the “difficulty of articulating the basis for utilization of different design basis threats if that proves necessary for different types of facilities.”⁵¹ The

⁴⁴ *Id.* It should be noted that in describing the size of the threat used by the task force to evaluate the protection provided by the draft rule, the Director generally characterized the threat as “a small external group,” which he immediately qualified in specific terms as [†]. Then, in summarizing the task force’s findings, the Director referred to the same external threat as “several individuals.”

⁴⁵ The Director also informed the Commission that in specifying the threat levels for the general performance requirement, “specific consideration was given to providing consistency between reactors and nonreactors. . . .” *Id.* at 3. As explained by the Director:

The general performance requirement has been stated in terms compatible with the [†] stated in the joint NRC-ERDA task force report for fuel cycle facilities. The Safeguards Supplement to GESMO and the companion regulation [†] as the baseline for safeguards performance. Continued use of the [†] will be reviewed at such time that (a) plutonium or high enriched uranium are adopted as basic power reactor fuel, and (b) fuel cycle safeguards have been upgraded to deal with the [†].

Id.

⁴⁶ *Id.* at 4.

⁴⁷ Staff Ex. S-9, Memo from the Secretary, p. 1.

⁴⁸ *Id.* at 2.

⁴⁹ *Id.* at 1. See n.41, *supra*. Compare Staff Ex. S-8, Enclosure A, p. 3 and 42 *Fed. Reg.* 10836 (February 24, 1977).

⁵⁰ Staff Ex. S-10, Memo from the Directors, p. 1.

⁵¹ *Id.* The Directors’ memorandum does not explain the basis for the staff’s anticipation of regulatory difficulty in differentiating between fuel cycle facilities and power reactors. It is clear from the Director’s memorandum, however, that the Commission was aware of the nature of the problem. In any event, this thread of staff concern runs throughout the history of the development of the design basis threat. See n.45, *supra*.

second was that the Energy Research and Development Administration (ERDA) classified detailed design basis threat information for facilities under its jurisdiction and “[t]he need for and value of a degree of consistency between policies used by the two government agencies on the same type of information is recognized as very high.”⁵²

To avoid both these problems, the Directors suggested “replacing the specific numerical definition of threat in §73.55 with a generalized description and compensating [for] the lack of specificity by defining minimum and nominal response force requirements.”⁵³ They explained that the size of the guard force “could be worded to achieve the desired level of protection against any particular threat without providing a positive numerical relationship to a threat.”⁵⁴ Or, as indicated in the staff report accompanying the Directors’ memorandum, the level of protection required to defend against the threat of [†] attackers as set forth in the draft rule could be accomplished by camouflaging the exact threat in a response force requirement specifying a nominal and minimum number of guards.⁵⁵ The Directors also provided the Commission with revised pages of the draft rule incorporating their proposal. These replaced the [†] characterization of the attack force in the design basis threat with “several persons” and added a provision to Section 73.55(h) specifying a nominal response force size of ten and an absolute minimum of five guards.

Shortly after receiving the new staff proposal, the Commission approved publication of the final physical protection rule. As reported by the Secretary, the Commission adopted the rule “originally proposed in staff paper SECY-76-242C, as amended in the February 2 memorandum from [the Directors of NRR and NMSS].”⁵⁶ Accordingly, the final reactor security rule — like the Directors’ proposed regulatory language — characterized the size of the adversarial force in the design basis threat as “several persons” and specified a nominal response force size of ten and an irreducible minimum force of five guards.

This history leaves no reasonable doubt that the Commission intended the “several persons” language of the design basis threat to be limited to [†]

⁵² *Id.*

⁵³ *Id.* at 3.

⁵⁴ *Id.* at 2.

⁵⁵ Staff Ex. S-10, Enclosure 1, pp. 2 and 4.

In its report, the staff determined that a response force ratio (*i.e.*, ratio of guards to attackers) must be equal to 1 to protect power reactors. The report then states: “Given the above response force ratio modified by a measure of conservatism, the minimum number of guards available for response to an assault may be determined. Therefore, for the presently specified threat, the minimum number of guards available for response at a nuclear power plant is judged to be 5.” Staff Ex. S-10, Enclosure 1, p. 4. The “presently specified threat” referred to in the report was the draft Section 73.55 which stated at that time an external threat of [†] persons and an insider capable of participating in a violent attack. See Staff Ex. S-9, p. 2. The staff presumably arrived at a minimum of five guards by [†] as “a measure of conservatism.”

⁵⁶ Staff Ex. S-11, p. 1.

attackers. To suggest, as Governor Brown argues (Br. at 7), that the Commission nowhere "spelled out" its intention to limit the design basis threat and that there is no basis to infer such intention is to ignore totally all of the regulatory history pointing in the opposite direction.⁵⁷ In short, Governor Brown's position implies that the Commission increased the size of the design basis adversarial force without (1) informing its staff, (2) analyzing whether the provisions of the reactor security rule would be either adequate or cost effective against the larger threat, or (3) increasing the size of the minimum response force.

Moreover, Governor Brown's argument is inconsistent with the Commission's subsequent statements concerning the size of the Section 73.1(a)(1) adversarial force. Five months after it promulgated the reactor security rule, the Commission published a proposed rule amending the safeguard requirements for fuel cycle facilities.⁵⁸ The external threat component of the general performance requirement in Section 73.20 of the proposed safeguards rule was identical to that for power reactors in Section 73.1(a)(1) except that the size of the attack force was characterized as "a small group" with "the ability to operate as two or more teams."⁵⁹ In a statement accompanying the proposed rule, the Commission contrasted the external threats for fuel cycle facilities and power reactors:

The adversary postulated in the proposed regulation is different from that in §73.55 with respect to the size of the adversary force. The size of postulated adversary force against which the safeguards performance is to be evaluated has been expressed to indicate that the group is large enough to employ effective team maneuvering tactics, unlike the "several persons" single team postulated as the adversary in §73.55.⁶⁰

⁵⁷ Similarly, we find unpersuasive Governor Brown's argument that the remarks of the Director of NRR at a press conference after adoption of the rule indicate the indefiniteness of the size of the design basis adversarial force. Br. at 8-9. Taken in context, the Director's press conference response that the term "several persons" was "[o]bviously . . . greater than one and . . . smaller than 100" is not surprising. Gov. Ex. S-4, Press Conference Transcript dated February 22, 1977, p. 15. The Director had just responded to the same question that he would not put a range on the term. He then, in a lighter vein, merely recited the obvious when he used the quoted language. Indeed, the Director's response is consistent with his actions as one of the two principal advocates who urged the Commission to delete the specific threat level from Section 73.1(a)(1) and replace it with a generalized description in conjunction with a nominal and minimum response force requirement so as to conceal the exact numerical threat.

Equally unconvincing is Governor Brown's argument concerning the May 1977 congressional testimony of the Acting Director of NRR. Br. at 9. In answer to a question on the definition of "several persons," the Acting Director responded that the agency had not defined the size of the design basis threat further in any unclassified information. Gov. Ex. S-5 (for identification). Oversight Hearings on Nuclear Reactor Security Against Sabotage Before the Subcommittee on Energy and the Environment of the House Committee on Interior and Insular Affairs, 95th Congress, 1st Session 11 (1977) (statement of Edson G. Case). Governor Brown argues that since Staff Exhibits S-8 through S-11 are not classified, these documents cannot be understood to limit the meaning of "several." At the time the Acting Director testified, however, these documents were undergoing classification review and could not be publicly released. Tr. 2084-85.

⁵⁸ See 42 Fed. Reg. 34310 (July 5, 1977).

⁵⁹ *Id.* at 34313.

⁶⁰ *Id.* at 34311.

After republishing the proposed rule,⁶¹ the Commission adopted a final fuel cycle safeguards rule⁶² with the same external adversary threat contained in the proposed rule. The fact that the Commission intended the "several persons" of the adversarial force [†] strongly suggests a limit of [†] persons for the design basis threat of Section 73.1(a)(1). This is so because a group of more than [†].⁶³ This additional evidence, combined with the other extensive regulatory history of the reactor safety rule, convinces us that the "several persons" language in the design basis threat must be interpreted as no more than [†] attackers.⁶⁴

3. We have concluded that at the time the Commission promulgated the reactor security regulations, it intended the external threat to be limited to [†] attackers. No subsequent Commission action is inconsistent with this interpretation. If we have erred, however, in divining its intent, we are confident that the Commission will correct us. We are equally sure that the Commission will take appropriate action should it now believe that a new interpretation of the size of the design basis adversarial force is necessary.

Because we have interpreted the design basis threat as being limited to [†] attackers, we need not determine whether the applicant's Diablo Canyon security system and organization can successfully protect the facility against an adversarial force of [†] or more persons. But it does not perforce follow that, because the design basis threat is limited to [†] attackers, a larger group could successfully commit radiological sabotage at Diablo Canyon. We have little doubt on the basis of the entire record before us that the applicant's security system and organization could, with perhaps even the requisite degree of high assurance, protect the facility against some larger number of attackers.

⁶¹ See 43 *Fed. Reg.* 35321 (August 9, 1978).

⁶² See 44 *Fed. Reg.* 68184 (November 28, 1979).

⁶³ Further support for this interpretation is also provided by the information contained in Staff Ex. S-8, SECY-76-242C, p. 3, on the size of the design basis adversarial force for fuel cycle facilities. See n.45, *supra*. The exhibit indicates that the external adversarial threat for fuel cycle facilities would subsequently be upgraded from a threat of [†] persons to a [†] as recommended in the GESMO safeguards study. Thus, in the language of proposed Section 73.20, [†]. 42 *Fed. Reg.* 34310, 34311 (July 5, 1977). The Commission confirmed that it intended to adopt the threat level recommended in GESMO when it republished the proposed safeguards rule. See 43 *Fed. Reg.* 35321, 35324 (August 9, 1978).

⁶⁴ We cannot accept Governor Brown's argument that "[i]t would be anomalous, indeed, if the NRC, while allegedly strengthening its regulatory requirements, would have reduced the size and character of the threats to be defended against by backing away from the then existing squad-size threat." Br. at 11, 4-6. Each of the minor premises on which Governor Brown builds his argument is erroneous. For example, Governor Brown contends that prior to the promulgation of Section 73.55 the staff reviewed the adequacy of licensee security plans employing an adversarial force larger than [†] attackers. Br. at 3-6. To establish this premise, he points to Regulatory Guides 1.17 (June 1973) and 5.43 (January 1975). Regulatory Guide 1.17 incorporates ANSI Standard N18.17 which, in turn, mentions a threat of a "small group." Regulatory Guide 5.43 mentions a threat of "squad size," which Governor Brown claims "customarily means six." Regulatory Guide 5.43 is inapplicable to power reactors and nowhere does ANSI Standard N18.17 or Regulatory Guide 1.17 define a "small group." As the history of Section 73.55 demonstrates, however, the staff, during the pendency of the rulemaking, often employed the term "small group" to mean [†] persons. See n.44, *supra*.

Nevertheless, the design basis threat which the applicant and staff considered for both the development of the security plan and its review was a threat of no more than [†] persons aided by an insider. James R. Miller, fol. Tr. 1911, p. 15; representation of applicant's counsel, Tr. 2245.⁶⁵ The record, therefore, does not include detailed analyses or systematic assessments of threats beyond that magnitude. Accordingly, the present record does not provide us with a sufficient basis for making a probative conclusion regarding larger threats. This is so because the level of confidence in successfully protecting the facility decreases as the number of attackers employing a high level of violence and sophisticated tactics and weapons increases beyond three.

The record does provide, however, a description of the Diablo Canyon security system and organization which was developed to meet the provisions of Section 73.55(b)-(h). Two of the expert witnesses most critical of the Diablo Canyon security system — Governor Brown's witness Louis O. Giuffrida⁶⁶ and SLOMFP's witness Jeremiah P. Taylor⁶⁷ — characterized the results of these security requirements as having transformed the applicant's facility into a "hard target." And, neither of these witnesses could name a single instance where a dissident group of any size had attacked a target of comparable "hardness" to Diablo Canyon. Giuffrida, Tr. 2516-17; Taylor, 2242-46. Governor Brown's other expert witness, Richard E. White,⁶⁸ not only conceded the "hardness" of the target but stated that it would take "far more people than [†] to successfully attack Diablo Canyon. White, Tr. 2808-09. Indeed, both Colonel Giuffrida and Chief Taylor expressed similar sentiments that it would be more reasonable to employ a force of ten to twelve rather than [†] to attack this type of target because a larger number would have a better chance of success. Giuffrida, fol. Tr. 2411, p. 20; Taylor, fol. Tr. 2213, p. 3; Tr. 2252. Chief Taylor stated that the applicant's perimeter security was one of the best he had ever seen and Colonel Giuffrida noted that the Diablo Canyon security system exceeded that of any United States military base in Vietnam with which he was familiar. Taylor, Tr.

⁶⁵ [†].

⁶⁶ Colonel Giuffrida is a retired regular Army officer who spent a significant portion of his military career with the military police where, in various capacities, he dealt with security matters. At the time of the hearing, Colonel Giuffrida was the Director of the California Specialized Training Institute in San Luis Obispo, California. The CSTI is a state institute organized in 1971 by Colonel Giuffrida at the request of the Governor which presents specialized courses on such subjects as terrorism, emergency management, police officer survival and contingency planning for hazardous materials. Fol. Tr. 2411, pp. 1-2 and biographical data, fol. p. 32. We note that in May 1981 Colonel Giuffrida became the Director of the Federal Emergency Management Agency (FEMA).

⁶⁷ Chief Taylor retired from the San Francisco Police Department in 1980 after thirty-three years of service. He rose through the ranks of the Department and in 1977 he was appointed Deputy Chief of Police. In his last assignment he commanded the Department's Detective Bureau. Fol. Tr. 2213, biographical data fol. p. 17.

⁶⁸ Mr. White retired from the Federal Bureau of Investigation in February 1980 after twenty-five years of service. In his last assignment he served as Special Agent in Charge of the FBI Office in Sacramento, California, which oversaw the Bureau's activities in thirty-four California counties. Fol. Tr. 2346, pp. 1-3 and biographical data, fol. p. 15.

2258; Giuffrida, Tr. 2601, 2636-40. Colonel Giuffrida and Mr. White knew of no comparable security system at a civilian installation in the United States. Giuffrida, Tr. 2759-60; White, Tr. 2742.

On the basis of this record, we believe the security system at Diablo Canyon, developed to meet the requirements of section 73.55, provides a strong deterrent to any group that might contemplate malevolent acts against the facility.

B. Denial of Petition for Exception to Design Basis Threat

We have rejected Governor Brown's argument that in adopting its reactor security regulations, the Commission intended a flexible, site-specific design basis threat which, in this case, would dictate an attack force of up to twelve intruders. In the alternative, Governor Brown has petitioned for an exception to the numerical limitation on the size of the design basis threat pursuant to 10 CFR 2.758. Br. at 12. We must now determine whether special circumstances warrant an exception to permit consideration of a larger external assault force.

Commission regulations are not subject to attack in adjudicatory proceedings.⁶⁹ A party may petition for a waiver or exception, however, on the ground that special circumstances in a particular proceeding are such that application of the rule or regulatory provision would not serve the purpose for which it was adopted.⁷⁰ If the petition makes a prima facie showing of grounds for a waiver or exception, the matter must be certified directly to the Commission for determination.⁷¹ Otherwise, the rule applies and may not be the subject of discovery, proof, or argument.⁷²

In support of his petition, Governor Brown relies on testimony presented at the security hearing and summarizes the "special circumstances" in this case as follows:

First, the uncontradicted expert testimony of Colonel Giuffrida, Mr. White, and Chief Taylor was that a group planning to attack the Diablo Canyon facility and having the design basis attributes specified in Section 73.1(a)(1) would *not* limit itself to [†] persons but rather would recruit a larger team. Such persons could number up to 12. Second, these witnesses also demonstrated that such design basis attackers *are* available for recruitment and could be trained, equipped, and moved to the facility undetected. Finally, they also testified that there is a terrorist threat in California — indeed, documented by the 1980 Report of the California Attorney General. Br. at 13.

⁶⁹ 10 CFR 2.758(a).

⁷⁰ *Id.* at 2.758(b).

⁷¹ *Id.* at 2.758(d).

⁷² *Id.* at 2.758(c).

In Governor Brown's view, these facts, combined with the lack of any site-specific threat analysis, make it "imperative" that the regulation be waived. "Otherwise," he asserts, "Diablo Canyon could be permitted to operate despite all of the probative evidence that indicates that the design basis attackers could not be successfully resisted." This would not "serve the public health and safety and the common defense and security," and would thus be contrary to the purposes for which the regulation was adopted. Br. at 13-14.

Neither the allegations in Governor Brown's petition nor the evidence in the record before us make a prima facie showing of special circumstances which would justify a waiver or exception in this case.⁷³ Prima facie evidence must be legally sufficient to establish a fact or case unless disproved. Governor Brown's arguments amount to nothing more than (1) a generic attack that the design basis threat postulated in the Commission's security regulations is unrealistic, and (2) an assertion that there is "a significant potential terrorist threat in California." Br. at 13. As such, they are insufficient to show that the application of Section 73.1(a)(1) to the particular circumstances of this case would be contrary to the purposes for which the rule was adopted.

As stated in Section 73.1(a), the purpose of Part 73 is to prescribe requirements for the establishment and maintenance of systems for the physical protection of plants and materials. Security systems for protection against radiological sabotage are to be designed with reference to the design basis threat specified in Section 73.1(a)(1). As we have seen, the Commission did not intend that threat to be an open-ended one to be determined on a site-specific basis using local intelligence sources; rather, it specified an external threat of no more than [†] attackers — which it described as "several persons" — to provide guidance for the design of security systems. In the absence of a showing that a credible threat larger than the design basis exists with respect to a particular facility, a waiver or exception would not be justified and, indeed, would directly contradict the purpose of the rule.

As Governor Brown recognizes, the design basis threat is a "given"; its probability of occurrence is irrelevant for purposes of designing and evaluating the applicant's security system. Gov. Proposed Findings at 13. But, in order to make a prima facie showing that the hypothetical design basis threat is insufficient for a particular facility, it is essential that there be a demonstration of the likelihood that the actual threat to the plant in question is greater than that which the Commission

⁷³ No affidavits accompanied the petition (as required by 10 CFR 2.758(b)) because the Governor purportedly relied "solely on evidence already given under oath." Br. at 13, fn. 3. But the Governor also failed to provide any citations to the record, simply referring us to his "Brief of Proposed Findings of Fact and Conclusions of Law, especially Sections I and VI." *Id.* at 12. Ordinarily, we would decline to search the record and proposed findings for evidence in support of a party's allegations. Because Governor Brown's petition concerns a potentially serious safety matter we have reviewed the entire record to determine whether grounds for a waiver or exception are present. See pp. 72-74, *infra*.

determined should be postulated for nuclear plants in general. There is no such evidence in the record before us.⁷⁴

Colonel Giuffrida testified that the applicant's analysis of its security plan postulated an unrealistic number of design basis intruders because an assault force of the type described in Section 73.1(a)(1) would not limit itself to [†] members for such an attack. Fol. Tr. 2411, pp. 19-20. Rather, they would recognize the need for a larger group, but would restrict their force to perhaps ten to twelve attackers as "the outside limit in span of control." *Id.* at 20. Similarly, Mr. White testified that a larger assault force (of unspecified size) would be more realistic, and Mr. Taylor considered a group of as many as twelve persons to be "logically predictable." White, fol. Tr. 2346, pp. 14-15; Taylor, fol. Tr. 2213, p. 3.

Colonel Giuffrida further testified that there are persons in the United States and throughout the world who meet the characteristics of Section 73.1(a)(1) and would be available to join forces with an individual or group that sought to assault a nuclear power plant. Fol. Tr. 2413, pp. 5-7. He cautioned that it would be a mistake to assume that the design basis attack would be made only by Americans or to rule out its possibility "on grounds that American terrorist groups as of now have not demonstrated either the interest or the capability to attempt such a hit." *Id.* at 28-30. He testified about various groups present in California which are "capable of terrorist acts." Tr. 2646-51, 2654-58. Finally, with the parties' stipulation that the Palestine Liberation Organization (PLO) has available to it all of the weapons contemplated by Section 73.1(a)(1), Colonel Giuffrida testified that the PLO would be capable of assembling a force of twelve design basis intruders to attack Diablo Canyon. Tr. 2627-33. He added that his testimony assumed that the PLO would gather its force elsewhere and bring it to California, because he had no basis for concluding that the PLO could gather such a force in California or elsewhere in the United States. Tr. 2633-34.

Nothing in the foregoing testimony, including that concerning the capabilities of the PLO, reveals a particularized threat to Diablo Canyon.⁷⁵ Colonel Giuffrida

⁷⁴ The existence of a record on this issue is unusual. Section 2.758(c) makes clear that if there is no prima facie showing of grounds for a waiver or exception, "no evidence may be received on that matter and no discovery, cross-examination or argument directed to the matter will be permitted, and the presiding officer may not further consider the matter." At the time of the hearing in this case, the proper interpretation of "several" as used in Section 73.1(a)(1) was in dispute. The waiver question was presented by Governor Brown after the hearing but before we ruled on the size of the design basis threat.

⁷⁵ Even if the PLO were established as a particularized threat to Diablo Canyon (as opposed to a generalized, potential threat to a variety of targets), the applicant would not necessarily be required to defend against it. Applicants or licensees need not provide for design features or other measures for the specific purpose of protection against the effects of attacks and destructive acts, including sabotage, by an enemy of the United States. *Florida Power and Light Co.* (Turkey Point, Units 3 and 4), 4 AEC 9, 11-12 (Commission Memorandum and Order of August 4, 1967), *affirmed sub nom. Siegel v. AEC*, 400 F.2d 778, 781-84 (D.C. Cir. 1968). (To the same effect, see 10 CFR 50.13, which indicates that

(Continued)

testified that in his opinion, an attack on Diablo Canyon in the next two years by a group of nine to twelve design basis intruders was “not likely.” Tr. 2786-87. He added, however, that he was not a predictor of future terrorist activity and that he was unable to rule out the possibility of such an attack. Tr. 2791. Thus, the only evidence concerning the likelihood of a larger-than-design-basis attack occurring at Diablo Canyon is, at best, speculative and inconclusive. Accordingly, the witnesses’ testimony that the applicant and staff used an unrealistic number of intruders as a design basis amounts to a generic challenge to the adequacy of Section 73.1(a)(1). As the Commission recently pointed out, the proper response to a generic issue such as this “is not waiver of the rule under 10 CFR 2.758 because this case presents no ‘special circumstances,’ but rulemaking to either amend or suspend the present rule.”⁷⁶

For the foregoing reasons, Governor Brown has not made a prima facie showing of special circumstances to justify an exception to Section 73.1(a)(1) in this case. Accordingly, his request that we certify to the Commission his petition for a waiver or exception is denied.

C. Other Challenges to the General Performance Objective and Requirements

Governor Brown has proposed a number of “factual” findings which are, in reality, legal arguments about the nature and purpose of the external component of the design basis threat of radiological sabotage.⁷⁷ As we have seen, the design basis threat is intended to be generic rather than site specific. Thus, there is no requirement that the applicant or staff perform “site-specific analyses or assessments of potential threats to Diablo Canyon,” as Governor Brown asserts. Gov. Proposed

the foreign enemy contemplated may be “a foreign government or other person.”) Such protection “is a responsibility of the nation’s defense establishment and of the various agencies having internal security functions.” *Siegel v. AEC*, *supra*, 400 F.2d at 783 (quoting the Commission’s statement of considerations, published at 32 *Fed. Reg.* 13445 (September 26, 1967)). Consistent with this principle, the Commission has clearly expressed an intention to limit the design basis threat of Section 73.1(a)(1) to domestic sabotage attempts. As mentioned above (p. 63, *supra*), in promulgating its final rules for physical protection of reactors, the Commission referred to the absence of “known groups in this country” having the requisite motivation, skill, and resources to attack a nuclear power plant. Similarly, in its statement of considerations accompanying the final upgraded physical protection rules for strategic special nuclear material and certain fuel cycle activities, the Commission again described the purpose of the design basis threat codified in Section 73.1(a) as defining “the general character of the domestic safeguards challenge.” 44 *Fed. Reg.* 68184, 68186 (November 28, 1979). In other words, the Commission did not intend the design basis threat of radiological sabotage to include the possibility of an attack by international or transnational terrorists.

⁷⁶ *Metropolitan Edison Co.* (Three Mile Island, Unit 1), CLI-80-16, 11 NRC 674, 675 (1980). We note that pursuant to 10 CFR §2.802, “[a]ny interested person may petition the Commission to issue, amend or rescind any regulation.”

⁷⁷ After initially proposing such findings, Governor Brown employs them repeatedly throughout his papers. See, *e.g.*, Gov. Proposed Findings at 28-29, 30-32, 43, 70-77.

Findings at 7. Similarly, there is no necessity to understand, characterize, and analyze “the attributes of the attackers . . . in light of the site-specific conditions at Diablo Canyon,” because the characteristics and attributes of the adversary are also generic and are already set forth in the regulation. *Id.* Thus, the applicant need not postulate the “skills, training, dedication, weapons, tools, communications equipment, and strategy” of the external force “under the site specific conditions at its own Diablo Canyon Plant.” *Id.* at 8. Nor must it understand and apply the design basis threat “both in terms of the persons deemed to assault the facility and the natural and man-made features pertaining to protection of Diablo Canyon.” *Id.* at 9.

The regulations do provide for consideration of site-specific factors in the design and implementation of the applicant’s physical protection system and in determining the number of armed responders needed (see pp. 103-104 [†] *infra*). But Governor Brown would have the design basis threat, rather than the applicant’s response to it, keyed to site-specific features. This is precisely the opposite of what the regulations require. Governor Brown also takes issue with the applicant’s characterization of the design basis threat, arguing that the applicant must approach the threat and develop its security system “in line with the proper characterization set forth by Colonel Giuffrida and Mr. White.” *Id.* at 10. To the extent that the witnesses’ characterization exceeds the regulatory requirements, however, it is a matter beyond our reach in this proceeding.⁷⁸ In a similar vein, the Governor argues that in arming its guards, applicant has not taken account of a long list of weapons such as fixed-wing aircraft, helicopters, mortars, rocket launchers, grenade launchers, and anti-tank weapons that various witnesses indicated would be available to terrorists. *Id.* at 12. But once again, the weapons used by the design basis attackers are established in the regulations. The fact that the NRC staff, prior to promulgation of the regulation in question, may have held a different view in responding to a congressional inquiry concerning what weapons would be available to the attackers⁷⁹ has no bearing on the application of the current rule. Indeed, the Commission specifically considered and rejected the possibility of requiring guards to be armed with automatic weapons when it issued its safeguards regulations.⁸⁰

Governor Brown further asserts that the applicant has not accounted for design basis attacks by stealth or deception that diminish the availability and effectiveness of the guards “by diversionary attacks on the perimeter fences, explosions at various perimeter locations, or similar tactics.” *Id.* at 11. Most of the examples

⁷⁸ Of course, if the Governor believes that the regulations seriously understate the nature of the threat to nuclear power plants, he may petition the Commission to amend these regulations. See n.76, *supra*, and accompanying text.

⁷⁹ See Staff Ex. S-16.

⁸⁰ See 42 *Fed. Reg.* 35321, 35325 (August 9, 1978); 42 *Fed. Reg.* 68184 (November 28, 1979).

which Governor Brown cites (*id.* at 28-39), however, necessarily would employ more than [†] persons acting as a [†].

See pp. 68-69 [†], *supra*. Thus, the Governor's assertions go beyond the intended capabilities of the design basis external attack force.⁸¹

Finally, Governor Brown argues that the Diablo Canyon security system and organization is incapable of protecting against attacks that might be inimical to the common defense and security. He asserts this is so because there are malevolent acts that could be taken against the PG&E facility which would cause radioactive releases below those resulting in the dose rates set forth in 10 CFR §100.11. And, according to the Governor "a design basis attack on Diablo Canyon that results in radioactive releases to the public (albeit below Part 100 levels) . . . is inimical to the common defense and security." Gov. Proposed Findings at 80-81.

The regulations establish requirements which are specifically designed to provide guidance for the development of a security system "which will have as its objective to provide high assurance that activities involving special nuclear material are not inimical to the common defense and security, and do not constitute an unreasonable risk to the public health and safety." 10 CFR §73.55(a). Governor Brown is correct that both these standards must be met before the applicant's facility may be licensed. But his conclusion that the "common defense and security" standard encompasses radiation releases resulting in doses less than those of Part 100 is without foundation. This regulatory term is directly derived from the Atomic Energy Act.⁸² As the Commission has held,

the common defense and security standard . . . refer[s] principally to: the safeguarding of special nuclear material; the absence of foreign control over the applicant; the protection of Restricted Data; and the availability of special nuclear material for defense needs.⁸³

Or, as stated by the Court of Appeals in affirming the Commission's order, the "common defense and security" standard refers to

such things as not allowing the industrial needs for nuclear materials to preempt the requirements of the military; . . . keeping such materials in private hands secure against loss or diversion; and . . . denying such materials and classified information to persons whose loyalties [are] not to the United States.⁸⁴

Thus, defense and security considerations are addressed by the specific regulatory requirement of Section 73.55(b)-(h) or are irrelevant to commercial power

⁸¹ Similarly, intervenor SLOMFP's argument concerning the interdiction or destruction of the access road to the plant must fail for the same reason. SLOMFP Proposed Findings at 6, 9.

⁸² See, e.g., 42 U.S.C. §2014(g).

⁸³ *Florida Power & Light Company* (Turkey Point Nuclear Generating Units No. 3 and No. 4), 4 AEC 9, 12-13 (1967).

⁸⁴ *Siegel v. Atomic Energy Commission*, 400 F.2d 778, 784 (D.C. Cir. 1968).

reactors. And, to the extent applicant's security plan meets the specific requirements of these subsections, nothing further is required.

IV. FACTUAL FINDINGS

A. Introduction

As previously noted, we recast the parties' numerous security contentions and issues into eight consolidated issues (many with several subparts) and raised two additional matters *sua sponte*.⁸⁵ The ten consolidated issues are set forth in Appendix A.⁸⁶ Because the matters raised and dealt with in Consolidated Issues 2 through 10 generally provide a description of the individual components of the Diablo Canyon security system, we have treated these issues first, in numerical order. Consolidated Issue 1, however, pertains to the integrated functioning of the entire security system and organization. Therefore, this issue is considered subsequent to Issues 2 through 10. Finally, we have separated the question of the appropriate size of the armed responder force from Consolidated Issues 1 and 4 and have dealt with it last.

Before turning to the consolidated issues, we provide a brief description of the applicant's physical site, which should be helpful for a fuller understanding of our findings on applicant's security system.

The Diablo Canyon facility is located adjacent to the Pacific Ocean in San Luis Obispo County, California, approximately seven miles north of the village of Avila Beach which is roughly equidistant from Los Angeles and San Francisco. The plant sits on a small coastal terrace ranging in elevation from 60 to 150 feet with the seaward edge forming a near vertical cliff. Extending down to the coastal terrace are steep, brush covered hills which form part of the San Luis Mountains and attain an elevation of 1500 feet within a mile of the site. App. Ex. S-63, p. 31.⁸⁷ The applicant controls the 750 acres (known as the restricted area) immediately surrounding the facility and this area is fenced. *Id.*; Bryan A. Dettman, Tr.

⁸⁵ In his Proposed Findings of Fact, Governor Brown makes his own aggregation of the matters presented in the case which does not correspond at all to the way they are presented in the consolidated issues. This approach has made our consideration of the complex questions raised much more difficult. It should be noted that our formulation of the first seven consolidated issues, to which Governor Brown did not object, expressly adopted and closely followed the wording and organization of subjects as they were originally proposed by Governor Brown himself. (See Rulings on Contentions, September 18, 1980, pp. 3, 4; also compare pp. 11-16 with "Statement of Specific Subjects on Which Governor Edmund G. Brown, Jr., Intends to Participate in the Security Plan Proceeding," September 2, 1980).

⁸⁶ The Table of Contents presents in capsulized form the topics covered by the consolidated issues.

⁸⁷ Applicant's Exhibits S-1 through S-50 are a series of photographs depicting individual aspects of the Diablo Canyon plant and security system. From the backgrounds appearing in Exhibits S-2 to S-9, one can gather an impression of the site itself. Also, Figures 1.2-1 and 2.1-3 of the Diablo Canyon FSAR (Volume 1) provide a plot plan and an aerial photographic view of the site.

1634-35, 2939; Gov. Ex. S.1, Fig. II-1. The property adjacent to the restricted area is ranch land and generally unpopulated. App. Ex. S-64, p. 11-1 and Appendix B; App. Ex. S-62, p. 11-1 and Appendix B;⁸⁸ Dettman, Tr. 1790. The primary access to the site is a seven-mile long private paved road from Avila Beach, the entrance to which is controlled by a manned guardhouse. App. Ex. S-63, p. 31; App. Ex. S-64, p. 2-1; App. Ex. S-1. Access to the facility is also possible from the north over a dirt track across private ranch land and then through a gate at the boundary of the restricted area. In dry weather and with the right vehicle, access is also possible from east of the facility over the company's power line roads. App. Ex. S-64, Appendix B; Dettman, Tr. 2917, 2939.

The Diablo Canyon facility is a two-unit pressurized water reactor with two containment structures, a turbine building, an auxiliary building and a security building forming the main plant area. A remote, cooling water intake structure is located on the shoreline. App. Ex. S-63, p. 32; App. Ex. S-50. [†]. Dettman, Tr. 1482-83; App. Exs. S-3, S-4, S-6, S-7, S-50. [†]. Dettman, Tr. 1493, 1814-17; Lawrence G. Lunsford, Tr. 1818; App. Exs. S-43 through S-49. Also located on the site some distance from the protected areas are a 500 kV and a 230 kV switchyard. App. Ex. S-63, p. 33. [†]. App. Ex. S-64, p. 3-6; Dettman, Tr. 1790-91.

Finally, because some construction activities are still under way at Unit 2 and the units share the turbine and auxiliary buildings, [†]. App. Ex. S-64, pp. 10-1 to 10-3; App. Exs. S-23, S-24, S-25. [†]. Lunsford, Tr. 1803-05; Dettman, Tr. 1826-27.

B. Adequacy, Implementation and Review of Safeguards Contingency Plan (Consolidated Issues 2 and 3)

One of the response provisions of Section 73.55(h) requires licensee to prepare, in accordance with the criteria of Appendix C of Part 73, a safeguards contingency plan for dealing with threats and radiological sabotage. As described in Appendix C, the goal of such plans is to organize licensee's response to safeguards contingencies by providing a predetermined, structured response which is fully integrated with the actions of local law enforcement agencies. To accomplish this goal, the contingency plan must contain: (1) an established set of decisions and actions to satisfy stated objectives; (2) a specification of the information, standards and procedures to effect the decisions and actions efficiently; and (3) an identification of the specific person, group or organization responsible for each decision and

⁸⁸ The applicant introduced, without objection, two versions of its security plan. Tr. 1948. Applicant's Exhibit S-62 is revision 9 of the plan, dated March 16, 1978. This version had been reviewed and approved by the staff at the time of the security hearing. Tr. 1585. Applicant's Exhibit S-64 is revision 10 of the plan dated May 1, 1979 and, at the time of the security hearing, had not yet been approved by the staff.

action. In particular, Appendix C requires that a safeguards contingency plan contain a background section identifying the perceived danger, the incidents with which the plan will deal, and the general way such matters will be treated. Part 73, App. C, §1. The plan must also have a generic planning base and a licensee planning base. The former must define the criteria for initiating and terminating responses together with the decisions, actions and information necessary to bring about such responses. Part 73, App. C, §2. The latter contains the various factors affecting contingency planning at each particular facility, such as licensee's organizational structure, the site's physical layout and hardware systems. Part 73, App. C, §3. In addition, the contingency plan must contain a responsibility matrix which identifies the organizational entities responsible for each decision and action associated with specific responses to each safeguards contingency. Part 73, App. C, §4. The detailed implementing procedures are the last category of information required by Appendix C. Although the procedures are not submitted to the Commission for approval, they must be available at the licensee's site as a guide specifying the actions to be taken and the decisions to be made by each member of the organizational units identified in the responsibility matrix. Part 73, App. C, Introduction and §5.

After preparing the contingency plan, the licensee must implement, revise, and maintain it. 10 CFR §73.40(d). Before implementing the plan, however, the licensee's safeguards capabilities must be fully functional, its personnel trained to respond to the plan's contingencies and its detailed procedures available at licensee's site. 10 CFR §§50.54(p) and 73.40(c). Once the plan is implemented, the licensee must annually review its safeguards procedures, audit its security system, and test its safeguards system along with the response commitments from law enforcement agencies. 10 CFR §73.40(d). And, to insure objectivity, the review must be conducted by individuals who are independent both of security program management and of persons who are directly responsible for implementing the security program. *Id.*

The applicant submitted a safeguards contingency plan to the agency, and the staff subsequently approved it. App. Ex. S-63; Staff Ex. S-15. Under the regulations, however, applicant's contingency plan need not be implemented until applicant receives an operating license. See 10 CFR §73.55. Because of the nature of the licensing process, the security hearing has preceded by a considerable period applicant's implementation of its contingency plan and the grant of an operating license. Therefore, we obviously cannot determine whether applicant has complied with all the regulatory requirements relating to its contingency plan. Rather, in this instance we must, in effect, approve applicant's present plans for future regulatory compliance. We must leave it to the Director of the Office of Nuclear Reactor Regulation to determine, before issuing an operating license, that the

applicant has satisfied all applicable requirements.⁸⁹ For example, the detailed procedures which are required to be prepared and then maintained at the applicant's facility need not be submitted to the agency as part of the contingency plan. Nor are those procedures (with but one minor exception)⁹⁰ part of the record before us. The Director, however, must ensure that applicant's procedures meet the general mandate of Appendix C and that they are available at Diablo Canyon before issuing applicant an operating license. Similarly, it is the Director's responsibility to see to it that applicant has adequately and properly trained the appropriate personnel to respond to the safeguards incidents set out in applicant's plan. See generally, Charles E. Gaskin, fol. Tr. 1913, pp. 7-8.

We are satisfied that applicant's contingency plan is in conformity with Appendix C. Applicant's plan contains all necessary categories of information and each of the four parts of the plan (*i.e.*, background section, generic planning base, licensee planning base and responsibility matrix) meets the criteria spelled out in the regulations. App. Ex. S-63. Indeed, applicant's plan is a virtual copy of the format and substance of the sample plan contained in Regulatory Guide 5.54 (March 1978). Staff Ex. S-5, pp. 5.54-7 *et seq.* For example, applicant's generic planning base in chapter two delineates the contingencies for which there are plans and for each event states the objective to be accomplished, the sequence of necessary decisions and actions to be undertaken if that event occurs, and the set of appropriate data to facilitate making those decisions and taking those actions. App. Ex. S-63, pp. 5-25; PG&E Panel, fol. Tr. 1584, p. 10. Accordingly, the plan adequately defines the criteria for initiating and terminating prescribed responses to specific threats and properly indicates the decisions, actions, procedures and supporting information to bring about those responses.

We are also satisfied, on the basis of the record before us, that applicant has adequately provided for the future implementation, revision and maintenance of the Diablo Canyon safeguards contingency plan. With the submission of the contingency plan, the applicant indicated its general intention to comply with Sections 73.40(c) and (d) of the regulations. Staff Ex. S-14, Attachment A. Our findings on the adequacy of applicant's security training are set forth in respect to Consolidated Issue 4 (pp. 81-88, *infra*) and will not be repeated here. We note, however, that the applicant instructs the security and operating personnel who have safeguards contingency responsibilities in the applicable procedures for each of the events set forth in the plan. PG&E Panel, fol. Tr. 1584, pp. 11, 22. The company also intends to conduct practical drills for its security personnel involving the plan's contingencies. Larry C. Fisher, Tr. 1879-81. Further, as we state in our findings on Consolidated Issue 6 regarding applicant's liaison with local law

⁸⁹ A similar situation is presented with respect to many other regulatory requirements as well. See, *e.g.*, pp. 88, 91-92, *infra*.

⁹⁰ See n.125 [†], *infra*.

enforcement, PG&E already has taken steps to familiarize the law enforcement agencies with Diablo Canyon and intends future practical drills involving such agencies. PG&E Panel, fol. Tr. 1584, p. 10; Dettman, Tr. 1655, 1679-81. These measures will ensure that the Diablo Canyon security force can timely identify and adequately assess safeguards threats and take the necessary responsive actions to neutralize them.

In addition, PG&E will annually review its contingency procedures and practices to test the safeguards system and verify its local law enforcement response commitments. This review will also include an audit of the testing and maintenance program for the security system. The review will be done by members of the PG&E Security Department (*i.e.*, the Security Representative) or the Steam Generation Department who are independent both of security program management and of personnel who have direct responsibility for implementation of the security program. PG&E Panel, fol. Tr. 1584, p. 11; App. Ex. S-62, p. 14-1.

C. Establishment, Management, Training, Equipment, and Qualification of a Physical Security Organization (Consolidated Issue 4)

Pursuant to 10 CFR §73.55(b)(1), a licensee must establish a security organization to protect its facility against radiological sabotage. At least one full-time member of that organization who has the authority to direct physical protection activities must be onsite at all times. 10 CFR §73.55(b)(2). The licensee must have a management system to provide for the development, revision, implementation and enforcement of its security procedures. That system must include (1) written security procedures documenting the structure and responsibilities of the security organization; and (2) provision for written approval of those procedures and any subsequent revisions of them by a person who has overall responsibility for security functions. 10 CFR §73.55(b)(3).

Section 73.55(b)(4) provides that members of the security organization must be trained, equipped, and qualified to perform their assigned security duties in accordance with the criteria of Appendix B of Part 73. Appendix B contains the detailed and extensive requirements for the selection, training, equipping, testing and qualification of security personnel. In addition, licensees must submit a training and qualifications plan outlining their procedures for compliance with Appendix B and generally must begin following the plan within 60 days after it is approved by the staff. Completion of the training and qualification of security personnel is not required, however, until two years after NRC approval of the plan is granted. 10 CFR §73.55(b)(4).

The applicant has established a command structure for its security organization which ensures that a qualified individual is always onsite to direct the activities of

the security force. Responsibility for general supervision of activities at applicant's facility resides in the plant superintendent. [†]. The security shift supervisors, like their superiors, are full-time PG&E employees, and all have the training and experience to direct the security force during both routine and crisis operation. In addition, the company has two individuals currently employed in the corporate security department who are fully qualified as security shift supervisors (and at the time of the hearing was training a third) to provide a substantial backup capability for these positions should the need arise. App. Ex. S-64, pp. 1-1 to 1-2; PG&E Panel, fol. Tr. 1584, p. 12; Miller, fol. Tr. 1911, pp. 22-24.

[†]. App. Ex. S-64, p. 1-2. The security force sergeant and all other members of the force below him in the chain of command are not PG&E employees; rather, they are Pinkerton security officers under contract to the company.⁹¹ The Pinkerton personnel, however, are fully trained by the company. Ronald G. Todaro, Tr. 2894-95.

Further, the applicant has established an adequate management system to provide for the development, revision, implementation, and enforcement of its security procedures. The Plant Staff Review Committee will review all plant procedures, including security procedures, at least once every two years. The Corporate Security Department will perform a yearly audit of the entire security program and submit detailed written reports of its findings and recommendations. In addition, the security supervisor will be continually responsible for the design, implementation, and review of security procedures. A number of changes to the security plan have already been made in response to the staff's concerns or the applicant's internal audits. PG&E Panel, fol. Tr. 1584, pp. 1213; Miller, fol. Tr. 1911, p. 25.

At the time of the security hearing in November 1980, the matter of the selection, training, equipment and qualification of the security force at Diablo Canyon was in a state of transition. The applicant had already submitted to the staff in July 1980 its training and qualification plan for complying with Appendix B and was awaiting staff approval.⁹² Shortly after securing that approval, applicant would be obligated to begin implementing its plan and would be allowed two years to achieve full compliance with Appendix B, as provided in the regulations. In the

⁹¹ The Commission's regulations require that when a licensee employs a contract guard force, the written agreement between the licensee and contractor shall clearly show that 1) the licensee remains responsible for maintaining security in accordance with the regulations and licensee's security plan; 2) the NRC has the right to inspect, copy and remove all security reports and documents; 3) the contract security personnel must be capable of performing all their assigned duties and responsibilities in carrying out licensee's security plan and the regulations; and 4) the contractor will not assign any personnel to the site who have not been made aware of these responsibilities. 10 CFR §73.55(b)(1). No party challenged the provisions of the contract between the applicant and Pinkerton and that contract is not part of the record of this proceeding.

⁹² The applicant's training and qualification plan was not offered into evidence by the company. The staff states in its proposed findings of fact that on January 1, 1981, it approved the applicant's plan. Staff Proposed Findings at 30, n.22.

interim, however, the regulations still required applicant to train the members of its security force so that they would be capable of protecting Diablo Canyon against radiological sabotage. See 10 CFR §73.55(a), (b)(3), and (b)(4).

The program for personnel selection, training, equipment, and qualification presented in applicant's prefiled direct testimony and set forth in its security plan (and which had provided the basis for the staff's approval of that plan) was not based on Appendix B but rather on the requirements of Regulatory Guide 5.20.⁹³ App. Ex. S-62, pp. 1-6 to 1-10; App. Ex. S-64, pp. 1-6 to 1-9; PG&E Panel, fol. Tr. 1584, p. 14; Miller, fol. Tr. 1911, p. 27; Gaskin, fol. Tr. 1913, p. 9. That guide was issued in 1974, long before the Commission's adoption of 10 CFR §73.55. It summarily sets out general criteria which the staff considered acceptable under the then applicable regulatory requirements for training, equipping and qualifying guards and watchmen for the physical protection of plants and material. See pp. 62-63 *supra*.

[†]. App. Ex. S-62, pp. 1-3 to 1-4; App. Ex. S-64, pp. 1-3 to 1-4; Todaro, Tr. 2892-94; Miller, Tr. 2109-10. [†]. Dettman, Tr. 1656-7. Security guards must also meet the minimum mental and physical qualifications of Regulatory Guide 5.20. App. Exs. S-62, pp. 1-4 to 1-5; App. Ex. S-64, pp. 1-4 to 1-5; Staff Ex. S-4, p. 5.20-2.⁹⁴

The Diablo Canyon security officers are equipped with uniforms, firearms, communication devices, and other security equipment. [†]. App. Ex. S-62, p. 1-9; App. Ex. S-64, p. 1-9; App. Exs. S-34, S-35; Dettman, Tr. 1490-91; Lunsford, Tr. 1718.

Applicant's security plan also provides for basic training consisting of an 80-hour sequence of classroom instruction and examination that includes the following topics: security plan overview; emergency plan overview; general plant overview; radiological safety; criminal law; search and seizure; report writing; personnel identification; access control; package control; vehicle control; fire control; bomb recognition and search; chemical agents; first aid; self-defense; crowd and mob control; security communications and alarms; alarm response; operational emergencies; firearms; and procedures. There is also a minimum of 40 hours of on-the-job training. Further, firearms training includes range practice and guards must be requalified semiannually. Specialized followup training and requalification are conducted on a quarterly basis and include such topics as

⁹³ Regulatory Guide 5.20, "Training, Equipping, and Qualifying of Guards and Watchmen" (January 1974). This regulatory guide is Staff Exhibit S-4.

⁹⁴ We reject the suggestion of SLOMFP's witness that security personnel at Diablo Canyon should be "requalified" by means of monthly polygraph examinations to test their loyalty. Taylor, fol. Tr. 2213, pp. 11-12. Besides the fact that this procedure would violate California statutes, frequent examinations would be impractical, detrimental to morale, and unreliable. Dettman, Tr. 2883-92. See Calif. Labor Code §432.2 (App. Ex. S-65 for identification).

records and reports, alarm systems, routine procedures, emergency procedures, law of arrest, and threat situations. App. Ex. S-62, pp. 1-6 to 1-10; App. Ex. S-64, pp. 1-6 to 1-9.

Governor Brown's expert witnesses put a great deal of emphasis on the need for guard force training. The gist of their testimony was that, in order to meet and overcome the design basis threat, the security force should be trained to function as a team and should engage in frequent and realistic mock exercises; this training should involve coordination with local law enforcement agencies as well. White, fol. Tr. 2346, pp. 4-8; Giuffrida, fol. Tr. 2412, pp. 8-14. In his proposed findings of fact, Governor Brown takes the position that the current level of training is inadequate and that the proposed future training discussed at the hearing is also inadequate. Gov. Proposed Findings at 47-52.⁹⁵ In this regard, Governor Brown's proposed findings ignore the fact that under the regulations, the applicant's training program will be superseded in the future by the provisions of Appendix B of Part 73. PG&E Panel, fol. Tr. 1584, p. 15; Miller, fol. Tr. 1911, pp. 26-28. Significantly, the Governor's witnesses did not offer any opinion of the adequacy of the training called for under that Appendix.

When it adopted the reactor security regulations in 1977, the Commission noted that it had under consideration a regulation concerning guard training and qualifications.⁹⁶ In promulgating the Appendix B training requirements in 1978, the Commission stated "that the upgrading of licensee guard quality was necessary."⁹⁷ The Commission also compared the content and scope of licensee's training programs with the provisions of Regulatory Guide 5.20 and concluded "that present training programs for new guards would not produce the quality needed to assure the effective protection of special nuclear materials, facilities, or shipments."⁹⁸ The Commission therefore believed that the training provisions of Appendix B, which, *inter alia*, were designed to meet the design basis threat of 10 CFR §73.1(a)(1), would tend to produce a better qualified and more effective guard force than was present at facilities where guards had been trained in accordance with Regulatory Guide 5.20.

A comparison of the requirements of Appendix B with those of Regulatory Guide 5.20 reveals the addition of a number of areas of training in the former that

⁹⁵ SLOMFP's proposed findings of fact make no mention of security force training.

⁹⁶ 42 *Fed. Reg.* 10836, 10837 (February 24, 1977).

⁹⁷ 43 *Fed. Reg.* 37421, 37424 (August 23, 1978).

⁹⁸ *Id.*

have no counterpart in Regulatory Guide 5.20.⁹⁹ Among these items, many¹⁰⁰ are directed towards training the response force in team response tactics — one of the necessary training elements most stressed by Governor Brown's expert witnesses, Colonel Giuffrida and Mr. White. Giuffrida Tr. 2793; White fol. Tr. 2346, pp. 4-5.¹⁰¹ Several other of the Appendix B provisions¹⁰² directly address the type of armed assault which the design basis threat of Section 73.1(a)(1) characterizes.¹⁰³ In contrast, the threat which the training in Regulatory Guide 5.20 is designed to meet is considerably less potent than the design basis threat set forth in 10 CFR

⁹⁹ Part 73, App. B §IID lists the numerous areas in which training is required. Among the requirements for power reactors for which there appears to be no counterpart in Regulatory Guide 5.20 are the following:

9. Adversary group operations.
10. Motivation and objectives of adversary groups
11. Tactics and force that might be used by adversary groups to achieve their objectives.
12. Recognition of sabotage related devices and equipment that might be used against the licensee's facility or shipment vehicle.
33. Response force organization.
34. Response force mission.
35. Response force operation.
36. Response force engagement.
38. Security command and control system during contingency operation.
55. Contingency response to confirmed intrusion or attempted intrusion.
56. Security system operation after component failure.
58. Security coordination with local law enforcement agencies.
60. Contingency duties.
62. Use of and defenses against incapacitating agents.
64. Contingency procedures.
67. Basic armed and unarmed defensive tactics.
68. Response force deployment.
69. Security alert procedures.
71. Response force tactical movement.
72. Response force withdrawal.
73. Response force use of support fire.
78. Site specific armed tactical procedures and operation.

¹⁰⁰ See, e.g., n.99, *supra*, items 34, 35, 36, 38, 68, 69, 71, 72 and 73.

¹⁰¹ Governor Brown's witness White also expressed his concern regarding the ability of the security force to function in the event that their field radios failed. We note that NUREG-0464, "Site Security Personnel Training Manual" (1978), which was published for comment at the same time as Appendix B, contains a section on response force engagement. (See n.99, item 36, *supra*). The training on that subject includes methods of command and control using voice and arm-hand signals. NUREG-0464, p. III-61.

¹⁰² See, e.g., n.99, *supra*, items 9, 10, 11 and 12.

¹⁰³ In its rebuttal testimony the applicant described the training program that it was presently using to train the security force at Diablo Canyon. This program involved group exercises, contingency drills, and exercises in which personnel play the role of the intruder. Tr. 2943-56. While it was never explicitly stated, it appears that applicant was in fact using, at least in part, its proposed Appendix B training and qualification plan program for current training rather than the program described in the security plan. See Miller, fol. Tr. 1911, p. 28. For example, the current program described in applicant's rebuttal testimony covered a two-month period (Todaro, Tr. 2943, 2946), while the program set forth in the security plan covered a three-week period. App. Ex. S-62, pp. 1-6 to 1-7.

§73.1(a)(1).¹⁰⁴ Similarly, the “high assurance” objective of 10 CFR §73.55(a) for meeting the design basis threat is not shared by Regulatory Guide 5.20.

Our review of applicant’s security plan training program based on Regulatory Guide 5.20 leads us to conclude, as did the Commission before us when it promulgated Appendix B, that the training complying with that guide is inadequate to prepare the security force to meet the design basis threat of 10 CFR §73.1(a)(1) — a threat which applicant’s security force is required to counter. In particular, it does not address the need for team movement and tactics by the response force, nor does it offer a focus on the types of assault that the force might be called upon to meet.

The circumstances of this case, however, have obviated any need on our part to determine precisely what training beyond that based on Regulatory Guide 5.20 is required. The applicant has announced its intention to implement its guard training and qualification plan to meet the requirements of 10 CFR §73.55(b)(4) (*i.e.*, Appendix B training) by no later than January 1, 1982.¹⁰⁵ The staff agrees with the proposed schedule.¹⁰⁶ As a practical matter, the applicant’s proposal amounts to a commitment to complete the Appendix B training and qualification prior to receipt of a full power operating license.¹⁰⁷ We agree with the applicant’s implicit assessment that its guard training and qualification plan should be completely implemented prior to full power operation and believe that the operating license should be conditioned accordingly.¹⁰⁸

We find that, upon successful completion of the Appendix B requirements, the applicant will have adequately demonstrated that its security organization is

¹⁰⁴ Appendix A of Regulatory Guide 5.20 states the threat that the training program should address as follows:

- a. Lone individuals familiar with the construction and operation of the facility
- b. A group of several individuals, some of whom may be armed with weapons such as rifles, side arms, and explosives,
- c. A group of unarmed individuals engaged in disorderly conduct or mob activities.

These three individual threats are significantly less severe than the maximum threat expressed in §73.1 of several well armed, well trained, dedicated individuals, aided by an active insider (see p. 59, *supra*). By its own terms, the guard training and qualification program of Appendix B was established to assure that security personnel would be capable of responding to that threat set forth in §73.1.

¹⁰⁵ Letter to Frank J. Miraglia, Chief, Licensing Branch No. 3, Division of Licensing, Office of NRR, from Philip A. Crane, Jr., PG&E counsel, dated July 16, 1981.

¹⁰⁶ Letter to Malcolm H. Furbush, PG&E Vice-President and General Counsel, from Frank J. Miraglia, Chief, Licensing Branch No. 3, Division of Licensing, Office of NRR, dated August 31, 1981.

¹⁰⁷ According to the latest NRC estimate, the licensing process for Diablo Canyon Units 1 and 2 cannot be completed before January 1982. U.S. Nuclear Regulatory Comm., “Regulatory Licensing Status Summary Report” (Internal Working Copy, May 29, 1981).

¹⁰⁸ Pursuant to 10 CFR §73.55(b)(4), the training and qualifications plan also includes detailed requirements concerning the security equipment that must be carried by or available to members of the security force. We assume that, upon implementation of the applicant’s training and qualifications plan, all of the required equipment not now included in the security plan will have been provided. We leave it to the Director of NRR to ensure that this is the case. In this regard, we note that the equipment currently used by the Diablo Canyon security force (see p. 83 [†], *supra*) is substantially the same as that set forth in Appendix B. See Part 73, App. B §V.

capable of responding to design basis threats in sufficient time to prevent sabotage or sabotage attempts inimical to the public health and safety or to the common defense and security. In particular, security personnel will have been required to demonstrate the required knowledge, skill, and ability to perform a myriad of security tasks, including contingency responses to confirmed or attempted intrusion, and team tactical procedures and operation. Thus, they will have completed the type of training and rehearsal which we find is essential and that Governor Brown's witnesses deemed necessary to an adequate defense of the Diablo Canyon facility. We must leave it to the Director of Nuclear Reactor Regulation to determine before authorizing full power operation that the applicant has satisfied all the criteria of Appendix B.

Finally, we note that on July 17, 1981, the Licensing Board issued a partial initial decision which, contingent upon resolution of the security issue, would authorize the issuance of a license to permit fuel loading and low power testing at Diablo Canyon. LBP-81-21, 14 NRC 107. The Board regarded its decision as incomplete without security findings and found that it had no basis to rule on that subject. *Id.* at 112, 144.

This situation demands our attention. Presumably the proposed fuel loading and low-power testing, if authorized by the Commission, may take place before January 1, 1982, the date by which applicant has committed itself to meet the full requirements of Appendix B. Therefore, the adequacy of security protection prior to that date could be called into question (see p. 86, *supra*). We believe two observations are pertinent in regard to this matter.

First, it appears that as long ago as November 1980, the applicant was probably engaged in Appendix B training (see n. 103, *supra*). In any event, that training had to be initiated in early March of 1981.¹⁰⁹ If PG&E is to meet its obligation to fully implement Appendix B by January 1, 1982, and given the time required to administer the additional training, a significant portion of applicant's guard force will have already received the training that Appendix B requires over and above the provisions of Regulatory Guide 5.20.

Second, the Licensing Board has found that "the risks from fuel load and low-power testing are considerably reduced from that of full-power operation of the Diablo Canyon reactors." LBP-81-21, *supra*, 14 NRC at 138. It based this conclusion on several factors, including the lower fission-product inventory present, the greater amount of time available for operators to terminate or mitigate an accident, and the reduced likelihood of occurrence of events leading to a radiological release. *Id.* We have not had the opportunity to review the entire record which underlies the Board's opinion, but our reading of that opinion and portions of the

¹⁰⁹ Section 73.55(b)(4) requires that the applicant begin to follow Appendix B within 60 days of the approval of its plan by the NRC. PG&E received staff approval of its Appendix B plan on January 1, 1981 (see n.92, *supra*).

record, as well as our own earlier deliberations on closely related sabotage issues for this very plant,¹¹⁰ give us no reason to question the validity of the Board's factual findings.

In these circumstances, we find that the training level of the Diablo Canyon guard force (somewhere between that specified by Regulatory Guide 5.20 and that of Appendix B) is adequate to provide high assurance against acts of radiological sabotage during the period of fuel loading and low-power testing. We note here in passing that the Director of Reactor Regulation himself must also be assured of the adequacy of the security organization training before issuing the low-power license.

D. Communications System (Consolidated Issue 5)

Subsection (f) of Section 73.55 requires that every on-duty member of the security force be capable of maintaining continuous communication with the operators of the central alarm station (CAS) and the secondary alarm station (SAS). The alarm station operators in turn must be capable of calling other security force members and local law enforcement authorities for assistance. 10 CFR §73.55(f)(1). In addition to conventional telephone service, each alarm station must have the capability of continuous two-way voice communication, either directly or through an intermediary, with local law enforcement authorities by means of radio or microwave. 10 CFR §73.55(f)(2) and (3). All non-portable communications equipment required by the regulations must be powered by a redundant independent source. 10 CFR §73.55(f)(4). Finally, Section 73.55(g), which deals with testing and maintenance of security systems, requires that the equipment for onsite communications be tested at the beginning of each work shift and that equipment for offsite communications be tested at least once a day. 10 CFR §73.55(g)(3).

[†].

Regular telephone service is provided by a Bell System affiliate, the Pacific Telephone and Telegraph Company. [†]. App. Ex. S-64, p. 7-1, Dr. Donald G. Rose, fol. Tr. 1893, pp. 13-14.

[†]. App. Ex. S-64, pp. 7-1 to 7-2; App. Ex. S-63, p. 32; Rose, fol. Tr. 1893, pp. 13-16.

[†]. App. Ex. S-64, p. 7-2 to 7-3; Rose, fol. Tr. 1893, p. 13; PG&E Panel, fol. Tr. 1584, p. 16; App. Exs. S-16, S-12, Dettman, Tr. 1486.

¹¹⁰ *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units Nos. 1 and 2), ALAB-334, 3 NRC 809, 821 *et seq.* (1976). In this opinion, we supported the Licensing Board's conclusion that nuclear fuel could be stored at the Diablo Canyon plant without creating an unreasonable risk of public harm. Among the sources of risk considered were the actions of a group of saboteurs who were assumed to have unimpeded access to the fresh nuclear fuel on the site. *Id.* at 821.

[†]. App. Ex. S-38; Dettman, Tr. 1491. [†]. App. Ex. S-64, pp. 7-3 to 7-4; Rose, fol. Tr. 1893, pp. 12-15. [†]. App. Ex. S-64, p. 7-4; Rose, fol. Tr. 1893, p. 14.

[†]. PG&E Panel, fol. Tr. 1584, pp. 18-22.

[†].

To comply with the requirements of Appendix C to 10 CFR Part 73, the applicant has established detailed operating procedures for the Diablo Canyon security communications equipment. PG&E Panel, fol. Tr. 1584, p. 17. Although these procedures are not before us, we note that the Director of NRR must be satisfied that the company's security personnel are trained to implement them before issuing applicant a license. The applicant also has established a procedure for testing its communications equipment. *Id.* [†]. App. Ex. S-64, pp. 12-2 to 12-3. We have already set forth in respect to Consolidated Issue 4 our findings on the adequacy of applicant's security training (pp. 81-84, *supra*) and will not repeat them here. Suffice it to note that the applicant has familiarized and trained the members of its security organization with the Diablo Canyon communications systems and has developed contingency plans addressing the loss of offsite communications and the necessary compensatory measures which the security organization must take. PG&E Panel, fol. Tr. 1584, pp. 11, 22; App. Ex. S-64, pp. 1-6 to 1-7; App. Ex. S-63, pp. 18-19, 97-101. Further, as we state in our findings on Consolidated Issue 6 regarding applicant's liaison with local law enforcement (p. 92 [†], *infra*), [†]. App. Ex. S-63, pp. 35-36.

We are satisfied that the applicant's extensive communications equipment, systems and procedures conform to the Commission's regulations and are sufficient to enable the Diablo Canyon security organization to meet the design basis threat.

E. Liaison with Local Law Enforcement Authorities (Consolidated Issue 6)

Section 73.55(h)(2) provides that a licensee "shall establish and document liaison with local law enforcement authorities." The response requirements of subsection (h)(4) then provide that once a threat is detected and assessed, the licensee must concurrently act to neutralize it by (1) interposing the plant security force between the adversary and vital areas and (2) "[i]nforming local law enforcement agencies of the threat and requesting assistance." 10 CFR 73.55(h)(4). Appendix C, which sets forth the criteria for safeguards contingency plans, requires that the plan show the main and alternative entry routes to the facility for law enforcement assistance forces and the control points for marshalling and coordinating response activities. Part 73, App. C, §3b. The plan must also list the available local law enforcement agencies (LLEA), their response capabilities and

criteria for response, as well as provide "a discussion of working agreements or arrangements for communicating with these agencies." Part 73, App. C, §3d. Finally, Section 73.40(d) requires that a licensee, as part of its annual contingency plan review, verify the response commitments from LLEA.

Once again,¹¹¹ many of Governor Brown's proposed "factual" findings on "PG&E's Liaison and Coordination with Local Law Agencies"¹¹² are, in reality, legal arguments about the nature and scope of the Commission's regulations. For example, Governor Brown posits findings that applicant's security system is fatally flawed because "[n]o mock exercises have been conducted by PG&E and LLEA to identify and resolve obvious coordination problems which can only be worked-out by meaningful practice under realistic conditions." Gov. Proposed Findings at 58. Yet the Commission's regulations do not require that applicant and LLEA engage in such tests and drills.

In 1977 when the Commission published Appendix C in proposed form, it contained a final section entitled "Development and Maintenance of the Plan."¹¹³ Among the requirements of that section was one stating that "[p]eriodic drills or tests will be made to ensure that safeguards contingency responses follow those set forth in the plan."¹¹⁴ Industry commenters complained that it was inequitable to hold licensees responsible for testing the actions of entities not under their control.¹¹⁵ In the final rule adopting Appendix C, the Commission deleted this provision and explained in its accompanying statement of considerations:

The Commission recognizes the inappropriateness of holding licensees responsible for actions of persons not subject to licensee control. Therefore, licensee responsibility during periodic drills or tests has been clarified to exclude responsibility for testing the reaction of response forces not under his control.¹¹⁶

In view of the Commission's having intentionally dropped this express joint-exercise provision, a similar requirement cannot reasonably be implied as part of its other regulatory provisions.

Moreover, the required coordination between the applicant and local law enforcement authorities is different both in type and in degree from that suggested by Governor Brown. Gov. Proposed Findings at 53-55; see counsel's argument, Tr. 1651-52. Section 73.55(h)(2) requires that applicant "establish and document liaison" with local authorities. In this context, the plain meaning of "liaison" is simply a communication to establish mutual understanding.¹¹⁷ Where the Commission intends licensees to establish a greater degree of coordination than

¹¹¹ See pp. 74-77, *supra*.

¹¹² Gov. Proposed Findings at 53-62.

¹¹³ 42 *Fed. Reg.* 25744, 25747 (May 19, 1977).

¹¹⁴ *Id.*

¹¹⁵ 43 *Fed. Reg.* 11962 (March 23, 1978).

¹¹⁶ *Id.* at 11963.

¹¹⁷ See Webster's Third New International Dictionary, p. 1302 (1971).

“liaison” with local law enforcement authorities, it says so expressly. The parallel provision of Section 73.46(h)(2) requires that licensees of fuel reprocessing facilities “establish and document *response arrangements* that have been made with local law enforcement authorities” (emphasis supplied). This difference in levels of coordination with LLEA for fuel cycle facilities and commercial power reactors¹¹⁸ is consistent with the Commission’s position that the potential consequences of reactor sabotage are less than the extreme consequences made possible by the theft of formula quantities of strategic special nuclear material.¹¹⁹ Accordingly, Section 73.55(h)(2) requires only that applicant clearly communicate with the appropriate local law enforcement authorities so that any misunderstanding concerning when the applicant will request assistance and when the local agency will respond are avoided. Prearranged, detailed plans for interfacing applicant’s security force and the LLEA response force so they may together respond to a myriad of security contingencies are not required by the regulations.

We are satisfied that the applicant’s coordination with local law enforcement authorities complies with the Commission’s regulations. Many measures which the applicant has already taken or, at the time of the hearing, intended presently to implement go substantially beyond the minimum regulatory requirements. Such steps as the company’s familiarization program for local law enforcement authorities (pp. 92-93, *infra*) and planned training exercises at Diablo Canyon with law enforcement personnel (p. 93, *infra*) should ensure effective working arrangements with local authorities.

Because the Diablo Canyon facility is located in an unincorporated area of San Luis Obispo County, [†] has primary law enforcement responsibility for the plant. Under the California Emergency Operations Plan, the [†] is also the area law enforcement coordinator with the authority to mobilize other law enforcement agencies should the need arise. In the event of a need for additional assistance at Diablo Canyon, [†]. App. Ex. S-63, p. 35; App. Ex. S-64, p. 1-14. [†]. App. Ex. S-62, Appendix B. [†]. *Id.*¹²⁰ At the time of the hearing these written response commitments were several years old. The applicant subsequently verbally confirmed them and believes that they are accurate and up-to-date. Moreover, the applicant has a continuous and ongoing relationship with the local law enforcement authorities. Dettman, Tr. 1832-33; Lunsford, Tr. 2957. Although we would prefer that applicant had shown greater initiative and introduced into the record current written LLEA response capability commitments, the existing ones, combined with their subsequent verbal confirmation to the applicant, are sufficient documentation to satisfy the regulations. We note, however,

¹¹⁸ See also 10 CFR §73.50(g)(2), where fuel storage facilities are treated in the same manner as power reactors with regard to licensee liaison with LLEA.

¹¹⁹ See, e.g., 42 *Fed. Reg.* 10836 (February 24, 1977).

¹²⁰ A discussion of LLEA response times appears at pp. 106-107, *infra*.

that the Director of Nuclear Reactor Regulation must be satisfied at the time he issues applicant an operating license that the LLEA commitments remain valid. Of course, once applicant has received a license, these commitments must be verified each year as part of applicant's annual contingency plan audit.

[†]. App. Ex. S-63, p. 35; see p. 92, *infra*. [†].¹²¹ *Id.* [†]. PG&E Panel, fol. Tr. 1584, pp. 22-23.¹²²

The applicant's safeguards contingency plan identifies the PG&E personnel authorized to request LLEA assistance. App. Ex. S-63, p. 29. [†]. *Id.* at 36; App. Ex. S-64, p. 1-15. The contingency plan also identifies those security contingencies for which offsite assistance is to be called and applicant trains its security personnel in the necessary procedures for such incidents. App. Ex. S-63, pp. 5-24, 39-124; PG&E Panel, fol. Tr. 1584, p. 22. [†]. *Id.* at 11, 63. We are satisfied, therefore, that the applicant's security personnel are adequately trained about when, how and which local law enforcement agencies are to be called for assistance.

Both the applicant's contingency plan and security plan detail the entry routes to the plant available to local law enforcement authorities. App. Ex. S-63, pp. 31, 33; App. Ex. S-64, Appendix B. [†]. App. Ex. S-63, pp. 36-37. [†]. App. Ex. S-63, p. 36; App. Ex. S-64, p. 1-15. [†]. These command arrangements have been discussed by the company with LLEA officials and, of course, the applicant cannot establish the response or command policy of the [†]. PG&E Panel, fol. Tr. 1584, p. 23; Dettman, Tr. 1654.

The applicant provides a yearly six-hour familiarization course at the Diablo Canyon site for members of the [†]. The course is for all members of the local law enforcement agencies who hold the rank of sergeant or above and is designed to provide them with a general understanding and knowledge of applicant's site and security plan. App. Ex. S-64, p. 1-14; PG&E Panel, fol. Tr. 1584, p. 23; Dettman, Tr. 1655. Among other things, the course includes classroom instruction on the plant's operation, emergency plan, security plan and federal reactor security regulations. It also provides a description of the applicant's site and an overview of the Diablo Canyon security organization including such things as the size, training, capabilities and structure of the force. The classroom instruction is augmented by a tour of the site and facility which focuses on the alarm and communication systems, access control and badging procedures and such physical features as the protected area perimeter, access points, and vital areas. App. Ex. S-64, Appendix B; PG&E Panel fol. Tr. 1584, pp. 23-24. At the time of the hearing, the applicant was in the process of updating a manual containing basic plant information to be provided on a restricted basis to the local law enforcement authorities. App. Ex. S-64, p. 1-15; Dettman, Tr. 1646, 1649. In addition to the LLEA personnel who

¹²¹ See p. 89 [†], *supra*.

¹²² See p. 89 [†], *supra*.

have attended the applicant's familiarization course, both the [†] have visited the site on several occasions; the applicant intends to conduct future joint training exercises and drills with these special LLEA units as well as with regular local law enforcement officers. The applicant also intends to continue its yearly familiarization program to ensure that newly promoted LLEA personnel will be capable of responding to security emergencies at Diablo Canyon. Lunsford, Tr. 1792-93, 2957; Todaro, Tr. 2956; App. Ex. S-64, p. 1-14. Recognizing that the applicant cannot establish the command policy of the responding LLEAs, we are satisfied that the applicant's arrangements with local law enforcement authorities provide for suitable crisis management and an adequate chain of command (both prior to and after the arrival of offsite assistance) to deal with security contingencies at Diablo Canyon.

Finally, it is important to place in proper perspective the role local law enforcement authorities will play in answering applicant's call for assistance in responding to a security contingency at Diablo Canyon. In part because of the isolated location of the Diablo Canyon facility, the applicant depends on LLEA assistance to the minimum extent possible to protect the plant against adversary action. App. Ex. S-63, p. 36. The initial response to neutralize any attempt of radiological sabotage will be made by applicant's security force. *Id.* at 5. [†]. In our view the applicant's response force ratio, combined with all the other components of the Diablo Canyon security system, reduce the significance of the response times of the local law enforcement authorities. Indeed, in approving the applicant's security and contingency plans, the staff gave no credit for the arrival and assistance of the LLEA and viewed the LLEA's role as one of apprehending any intruders. Gaskin, fol. Tr. 1913, p. 14; Miller, Tr. 2182-83.

F. Detection and Surveillance Systems (Consolidated Issue 7)

Subsection (e) of Section 73.55 addresses the regulatory requirements for detection aids in reactor security systems. It provides that all alarms must annunciate in two separate continuously manned alarm stations, one of which must be located within the protected area. The onsite central alarm station must be considered a vital area; its walls, doors, ceiling, floor, and any windows must be bullet resisting and it must be located within a building such that the interior of the station is not visible from offsite. 10 CFR §73.55(e)(1). All alarm communications in the alarm station must indicate the type and location of the alarm. Further, all alarm devices, as well as the transmission lines to annunciators, are required to be tamper indicating and self checking; *i.e.*, there must be an automatic indication of a failure of the alarm system or component, or when the system is on standby power. 10 CFR §73.55(e)(2). Finally, subsection (e)(3) requires that all emergency exits within the protected and vital areas be alarmed.

Under the Commission's regulatory scheme for reactor security systems, a complete physical protection plan consists of overlapping parts. Therefore, to some extent, all of the subsections of Section 73.55 play a part in the detection and surveillance functions of the security system. Most directly relevant to these functions, however, are the additional regulatory requirements set forth in the subsections (c), (d), and (f) dealing with barriers, access, and response to intrusions. For example, in addition to the physical barrier requirements, Section 73.55(c) also requires that all exterior areas within the protected area must be periodically inspected to detect the presence of unauthorized persons, vehicles or materials. 10 CFR §73.55(c)(4). All exterior areas within the protected area must also be sufficiently illuminated so that the isolation zones adjacent to the protected area may be monitored for intruders. 10 CFR §73.55(c)(5).

The access requirements of Section 73.55(d) serve a vital detection function by exposing potential threatening activities. All points of personnel and vehicle access into protected areas must be positively controlled. At the point of entry into a protected area, all persons must be identified and searched for firearms, explosives, incendiary devices or other items which could be used to commit radiological sabotage. 10 CFR §73.55 (d)(1). All hand carried packages, material for delivery, and vehicles entering the protected area must be similarly searched and all non-licensee vehicles escorted. 10 CFR §73.55(d)(2), (3) and (4). The personnel badging and escort requirements of Section 73.55(d)(5) and (6) are specifically designed to aid in detecting unauthorized individuals within the protected area. As with access to protected areas, licensees must positively control all points of personnel and vehicle access to vital areas. Only those individuals who require access to vital equipment to perform their duties are routinely permitted into vital areas and they must be specially badged. All unoccupied vital areas must be locked and alarmed. 10 CFR §73.55(d)(7). Access to the reactor containment must be through doors or hatchways which are locked and alarmed; whenever frequent access is necessary, positive access control by a guard or watchman is required to assure that only authorized personnel and material enter the containment. 10 CFR §73.55(d)(8).

Finally, the response requirements of Section 73.55(h)(6) require a capability for observing the isolation zones and protected area perimeter (preferably by closed circuit television) which limits the exposure of responding personnel to attack. Although the purpose of this observation capability is to facilitate assessment of a threat and any subsequent response, it serves an important surveillance and detection function as well.

[†]. App. Ex. S-64, pp. 3-3 and 3-6; App. Ex. S-50; PG&E Panel, fol. Tr. 1584, pp. 24-25; Rose, fol. Tr. 1893, p. 18. [†]. See App. Ex. S-50. [†]. Rose, fol. Tr. 1893, p. 18.

[†]. PG&E Panel, fol. Tr. 1584, p. 25; Rose, Tr. 2182. [†]. *Id.*

At Diablo Canyon, a detection system such as the one proposed by intervenor SLOMFP (Taylor, fol. Tr. 2213, pp. 8-10), encompassing a vibration or strain system at the protected area boundary, would not enhance security and does not favorably compare [†]. Such a detection system incorporates either a device affixed directly to a fence to detect small vibrations or a device that can detect changes in the tension of one or more wires stretched along the fence. Both devices are capable of detecting the presence of an individual climbing or cutting through a fence. Rose, fol. Tr. 1893, p. 19. Vibration or strain devices have high false alarm rates, are easily seen and circumvented, and are incapable of detecting an individual going over or under a fence if the fence is not touched. *Id.* For these reasons, the staff discourages their use in reactor security systems. Rose, Tr. 2183. [†]. Rose, Tr. 1993.

[†]. App. Ex. S-64, p. 3-5; App. Ex. S-62, p. 3-4 and Appendix H, pp. H-18 to H-20; App. Ex. S-50; PG&E Panel, fol. Tr. 1584, p. 26; Dettman, Tr. 1606.

[†]. Dettman, Tr. 2920-21, 2980; Alfred W. Medcalf, Tr. 1789; App. Ex. S-64, pp. 11-1 to 11-2. [†]. App. Ex. S-64, p. 3-5; PG&E Panel, fol. Tr. 1584, p. 2. [†]. *Id.* [†]. App. Ex. S-15; Shiffer, Tr. 1636. [†]. App. Ex. S-15.

[†]. App. Ex. S-64, p. 3-4. [†]. *Id.* at pp. 3-6 to 3-7; App. Ex. S-50.

[†]. App. Ex. S-64, p. 3-7; Rose, fol. Tr. 1893, p. 18.

[†]. App. Ex. S-56. [†]. App. Ex. S-64, pp. 5-2, 5-3, 6-1; Dettman, Tr. 1728-29.

[†]. App. Ex. S-64, p. 3-7. [†]. App. Exs. S-18 and S-19. [†].¹²³ App. Ex. S-64, pp. 6-1, 6-2, and Appendix H; App. Ex. S-62, Appendix H; App. Ex. S-16, S-17; Dettman, Tr. 1485-86. [†]. PG&E Panel, fol. Tr. 1584, p. 26; Dettman, Tr. 1600-01; App. Ex. S-64, Appendix H. [†]. App. Ex. S-18, S-19. [†]. PG&E Panel, fol. Tr. 1584, p. 26; Dettman, Tr. 1602. [†]. App. Ex. S-64, pp. 6-1, 6-2 and Appendix H. [†]. App. Ex. S-64, p. 3-6; Dettman, Tr. 1761.

[†]. App. Ex. S-64, pp. 3-7, 3-8; App. Exs. S-2, S-3. [†]. App. Ex. S-64, pp. 3-8, 12-2; App. Exs. S-10 to S-13; Dettman, Tr. 1484-85. [†].¹²⁴

[†]. App. Ex. S-64, pp. 3-8, 3-11, 4-2; App. Ex. S-3; Dettman, Tr. 1480.

[†]. App. Ex. S-64, p. 5-4; App. Exs. S-14, S-56; Rose, fol. Tr. 1893, p. 20.

[†]. App. Ex. S-64, p. 5-4; Dettman, Tr. 1485. [†]. App. Ex. S-64, pp. 5-4, 13-2. [†]. App. Ex. S-62, Appendix H, p. 30. [†]. App. Exs. S-63, p. 34; S-64, pp. 3-8 and 3-9.

[†].¹²⁵ Todaro, Tr. 1736, 2914-15.

¹²³ Operators of CAS and SAS are trained in security and alarm procedures using both alarm station consoles. Lunsford, Tr. 1829; Todaro, Tr. 2948. The applicant has ordered an extra console for training in the future. Medcalf, Tr. 2948-49.

¹²⁴ See p. 98 [†], *infra*.

¹²⁵ [†]. Gov. Ex. S-7 (Applicant's Security Procedure SP-613(S)). See p. 103 [†], *infra*.

[†]. App. Ex. S-64, pp. 3-4, 3-7, 4-1. [†]. *Id.* at p. 2-1; Dettman, Tr. 1630-34, 1641-42. [†]. App. Ex. S-64, pp. 1-2 to 1-3; Robert Patterson, James D. Shiffer, and Medcalf, Tr. 1795-97.¹²⁶

We are satisfied that the applicant's extensive detection and surveillance equipment and procedures are in conformity with the regulations and that they are sufficient to provide an effective warning of threatened malevolent activities.

G. Identification of Vital Areas Where Radiological Sabotage Is Possible (Consolidated Issue 8)

The Commission's regulations define a "vital area" as any area which contains vital equipment; and the latter as the equipment, devices, materials or systems which could directly or indirectly endanger the public health and safety by exposure to radiation if they fail or are released or destroyed. If vital equipment should fail or be released or destroyed, the equipment or systems which must function to protect the public health and safety also are considered vital. 10 CFR §73.2(h) and (i). All vital equipment must be situated within a vital area so that access to it is through at least two barriers (one of which must be physically separate from the protected area perimeter). The barriers must be of sufficient strength that, in combination with the other components of the security system, the performance requirements of Section 73.55(a) are met. 10 CFR §73.55(c)(1) and (2).

The staff has further divided vital areas into two categories, Class I and Class II.¹²⁷ The former are those areas containing systems or components the failure or destruction of which results in a direct release of radiation. The latter areas are those containing systems or components the failure or destruction of which would result in the release of radiation only in conjunction with additional sabotage in at least one other separate vital area. Roy A. Haarman, fol. Tr. 1917, p. 3; Rose, fol. Tr. 1893, p. 20; Staff Ex. S-6, pp. 2-3. In its security plan, the applicant has identified the vital systems and equipment at Diablo Canyon and then described the vital areas in which such equipment is located as either Class I or Class II areas. App. Ex. S-64, pp. 5-1 to 5-2. Detailed drawings in the security plan specify the precise locations of the vital areas. *Id.* at Appendix D; App. Exs. S-50 through S-61. The security plan also details the composition of the plant's vital area barriers, which description attests to the substantial strength of all such barriers. App. Ex. S-64, p. 5-3. [†]. Dettman, Tr. 1709-10.

The applicant's inventory of vital equipment and vital areas has been independently verified by an engineering team from the Los Alamos Scientific

¹²⁶ See also pp. 80-81, *supra*.

¹²⁷ Staff Ex. S-6, "Definition of Vital Areas, Revision 1 — Review Guideline No. 17."

Laboratory. That team systematically analyzed the Diablo Canyon facility using a computer code applying graphic fault tree logic for the thousands of combinations of events and locations capable of leading to radiological sabotage. Like the applicant, the review team compiled its inventory of vital areas using the assumption that the “undesired goal” was a release of radiation resulting in doses in excess of those set forth in 10 CFR §100.11. Haarman, fol. Tr. 1917, p. 4; App. Ex. S-64, p. 5-1. This same type of review has been applied to approximately 40 other light water reactors in this country. To avoid prejudicing the outcome, the entire review was conducted without reference to the applicant’s security plan until the final step, when the review team’s results were compared with the security plan. The review confirmed that PG&E had properly identified in its security plan all vital areas where acts of radiological sabotage could occur. Haarman, fol. Tr. 1917, pp. 3-4, 6.

We find, therefore, that the applicant has adequately specified the vital areas at Diablo Canyon where acts of radiological sabotage within the meaning of 10 CFR §73.2(p) could occur; and we are satisfied that the company has complied with the regulatory requirements regarding vital area barriers. In addition, the proper specification of vital areas, combined with all the other components of the Diablo Canyon security system and organization, will ensure an adequate and timely response by applicant’s security force to any design basis threat of radiological sabotage.¹²⁸

H. Compensatory Measures for Compressor Building Intrusion into Isolation Zone (Consolidated Issue 9)

The physical barrier provisions of Section 73.55(c) require, among other things, isolation zones adjacent to the physical barrier of a facility’s protected area. Such zones must be clear of all objects which could conceal or shield an individual and must be of sufficient size so that people on either side of the barrier can be seen in the event of its penetration. 10 CFR §73.55(c)(3); 10 CFR §73.2(k). At Diablo Canyon, an air compressor building (with a roof height of approximately ten feet) is located just outside and adjacent to the perimeter fence on the northeast side of the facility. The regulations, however, permit the authorization of security measures in lieu of any specific regulatory requirement as long as the substitute measures provide an equivalent level of protection. 10 CFR §73.55(a). This circumstance led us to inquire about the efficacy of applicant’s security measures to compensate for the location of the compressor building in the isolation zone. [†]. PG&E Panel, fol. Tr. 1584, p. 29; Miller, fol. Tr. 1911, p. 29; App. Ex.

¹²⁸ [†]. See p.95 [†], *supra*. [†]. Ex. 62, Appendix H, p.30; see p.95, [†] *supra*. [†].

S-64, p. 3-2; App. Exs. S-27 through S-29. [†]. App. Ex. S-64, p. 3-2; Miller, fol. Tr. 1911, p. 29. [†]. Dettman, Tr. 1824-26. Accordingly, we find that the compensatory security measures employed by applicant provide protection equivalent to that provided by the isolation zone. Moreover, we note that it is the company's intention to remove the compressor building once all major construction at the site is completed. PG&E Panel, fol. Tr. 1584, p. 30.

I. Emergency Vehicle Exception to Access Requirement (Consolidated Issue 10)

The regulations require that the licensee control all points of personnel and vehicle access into a protected area. 10 CFR §73.55(d)(1). All persons entering a protected area must first be identified and then searched, either physically or with the use of equipment capable of detecting firearms, explosives, and incendiary devices. *Id.* All hand-carried packages must be searched in the same manner and, with certain exceptions, all material for delivery into a protected area must be identified and then searched. 10 CFR §73.55(d)(2) and (3). Similarly, all vehicles entering a protected area, "except under emergency conditions," must be searched and, with the exception of designated licensee vehicles, then escorted by a member of licensee's security organization. 10 CFR §73.55(d)(4). Those individuals who are authorized entry into a protected area without escort must display a picture badge, while all others authorized entry must be escorted and display a badge indicating that they require an escort. 10 CFR §73.55(d)(5) and (6). Because the regulations require emergency vehicles to be escorted but exempt such vehicles from other access requirements, we raised the issue of how the applicant's security force confirms, before permitting entry of a vehicle without search, that an emergency in fact exists and the vehicle seeking entry is legitimately responding to the emergency.

[†]. App. Ex. S-64, p. 3-11. [†]. *Id.* [†]. (*id.* at p. 4-2), [†]. *Id.* at p. 3-11. See also App. Ex. S-62, pp. 3-14, 4-2. [†].¹²⁹ [†]. PG&E Panel, fol. Tr. 1584, pp. 30-31. [†]. PG&E Panel, fol. Tr. 1584, p. 31; Miller, fol. Tr. 1911, p. 30. [†]. Miller, fol. Tr. 1911, p. 31. [†]. PG&E Panel, fol. Tr. 1584, p. 31; App. Ex. S-64, p. 4-2.¹³⁰

J. Sufficiency of Applicant's Safeguards System (Consolidated Issue 1)

As established in our initial discussion of the security regulations, the general performance objective of Section 73.55(a) for safeguards systems — to provide

¹²⁹ [†]. App. Ex. S-64, p. 2-1 (emphasis supplied). [†]. See App. Ex. S-63, p. 31.

¹³⁰ [†]. (App. Ex. S-64, p. 3-11) [†].

high assurance of protection against radiological sabotage — is normally satisfied once the detailed requirements of Sections 73.55(b) through (h) are met. See pp. 59-60, *supra*. Consolidated Issue 1, consisting of subissues (a) through (d), is an extensive statement of assorted challenges to the sufficiency of applicant’s safeguards system. We have reviewed the various components of that system and, for the most part, have found them to be adequate. We have also considered a number of legal arguments about the proper characterization of the design basis threat. See pp. 60-71 and 74-77, *supra*. Thus, we have already dealt with many of the matters raised by subissue (c) and need not repeat our findings here. Items still remaining to be considered comprise three topics: first, Chapter 11 of the Security Plan (subissues (a) and (b)); second, the “insider” element of the design basis threat (subissues (c)(iii) and (v)); and third, the applicant’s procedure for hostage situations (subissue (d)). We address each topic in turn.

1. Chapter 11 of the Security Plan is entitled “Overall Security Plan Performance.” The introductory portion of the chapter declares its purpose to be a demonstration of how the design basis threat of 10 CFR §73.1(a)(1) will be met at Diablo Canyon in order to provide high assurance of protection against successful sabotage. This is followed by a general description of the site and the security system, with emphasis on those aspects of the system designed to detect and assess threats. The final part of Chapter 11 is an outline of three postulated scenarios involving an intruding force, characterized by applicant as “worst case.” In each case, the scenario is followed with time sequences to a conclusion in which the armed responding force has “neutralized” the intruders either before a successful act of sabotage is committed, or in time to allow plant operators to prevent an intruder-initiated chain of events from having radiological consequences.¹³¹

[†]:¹³²

Case 1

[†].

Case 2

[†].

¹³¹ In applicant’s terms, “neutralization” of an intruder means rendering the intruder incapable of committing radiological sabotage. Medcalf, Tr. 1643.

¹³² The cases appearing in Chapter 11 use a code to refer to various vital systems and equipment. The above exposition of these scenarios utilizes portions of the record transcript to augment the description found in Chapter 11. See Tr. 1500-62; 1684-1724, 1748-62; App. Ex. S-64, Chapter 11.

Case 3

[†].

Subissue (a) of Consolidated Issue 1 challenges the type and magnitude of the threats portrayed in Chapter 11, and subissue (b) questions the adequacy of applicant's threat analysis. Governor Brown's proposed findings, like the testimony of his expert witnesses at the hearing, particularize the alleged inadequacies of applicant's Chapter 11 scenarios. In essence, these findings state that the characteristics and attributes of the potential intruders and the assaults to be expected from them would be more imaginative and severe than those presented by applicant. The findings are also critical of the details presented in the Chapter 11 scenarios.¹³³ Almost without exception, however, Governor Brown's proposed findings either exceed the design basis threat or misapprehend the purpose of Chapter 11.

Unlike those sections of the Security Plan concerning specific components of the applicant's security system, Chapter 11 is not directly tied to a specific regulatory requirement. Rather, it is a staff-imposed exercise intended to demonstrate that the component parts of the security system are capable of functioning in an integrated fashion in the event of an attack. Rose, fol. Tr. 1893, pp. 3-4; Miller, Tr. 2024. As such, it is a logical extension of the regulatory approach that the general performance objective for the safeguards system is normally satisfied once the detailed requirements for its component parts have been met.

Chapter 11 is the applicant's response to requirements implied in the staff's "Security Plan Evaluation Report Workbook."¹³⁴ Rose, fol. Tr. 1893, pp. 3-4. That document indicates how a staff reviewer might assess the adequacy of Chapter 11 by confirming that the security system had been evaluated using "computer models such as EASI, TSO, or . . . manual quantitative techniques." Staff Ex. S-2, p. 11-1. The staff used the EASI analysis as a check of applicant's manual technique. EASI is a simplistic "probabilistic model that combines alarm probabilities, delays of attackers, and response force times to estimate the probability that the response force can intercept the attackers."¹³⁵ Rose, fol. Tr. 1893, p. 5. It is concerned only with the time required to intercept the intruders; it does not take into account tactics or the human characteristics of either the attackers or the responders, nor does it address the question of "who wins the battle" once the

¹³³ SLOMFP filed no proposed findings on subissues I(a) and 1(b) *per se*. In addressing the subissues under 1(c), however, intervenor argues that the Chapter 11 scenarios are unrealistic in that the number of intruders considered is too small and that the cases presented there are not the "worst" cases. This is so because they do not include variations on the attack scenarios which could complicate the response and the recovery sequence, or attacks which could be more easily mounted but which might have less severe potential consequences. SLOMFP Proposed Findings at 3-6.

¹³⁴ NUREG-0416 (January 1978). Chapter 11 of NUREG-0416 is Staff Ex. S- 2.

¹³⁵ See generally Staff Ex. S-3 ("User's Guide for Evaluating Physical Security Capabilities of Nuclear Facilities by the EASI Method," NUREG-0184 (June 1977)).

intruders are intercepted.¹³⁶ *Id.*; Tr. 1956-61, 2169-72. The staff considers Chapter 11 to play a small role in the ultimate approval of the Security Plan and in determining the adequacy of the safeguards system to protect the applicant's facility against radiological sabotage.¹³⁷ Rose, fol. Tr. 1893, p. 4; Miller, Tr. 2024; Gaskin, Tr. 2176. This is further shown by the fact that Chapter 11 is not even mentioned in the Staff's Security Plan Evaluation Report for Diablo Canyon. See Staff Ex. S-1.

We conclude that the purpose of Chapter 11 is to show that the various individual parts of the system would function together under attack conditions. It follows therefore that the applicant, preparing Chapter 11 on the staff's instructions with this understanding of its purpose, need not draft a set of scenario analyses detailed and exhaustive enough to provide the type of demonstration Governor Brown and the intervenor seek. It also follows that perceived inadequacies in the Chapter 11 cases and their analysis by the applicant cannot necessarily be translated into inadequacies in the security system.

For example, Governor Brown and SLOMFP suggest findings that the scenarios portrayed in Chapter 11 are not "worst" cases. These parties are apparently applying the modifier "worst" to the nature of the external threat itself. Gov. Proposed Findings at 28-29; SLOMFP Proposed Findings at 4-5. It is clear, however, that in preparing Chapter 11, applicant considered the "worst" that could happen at the plant from the standpoint of the potential consequences of radiological sabotage. Shiffer, Tr. 1499, 1764-5; PG&E Panel, fol. Tr. 1584, pp. 1-2. [†]. See pp. 99-100 [†], *supra*. We conclude that this condition is indeed a worst case as far as radiological sabotage is concerned.

Additional findings proposed by Governor Brown provide a list of possible distortions that might be added to the assault scenarios to make them worse than those considered by the applicant (*e.g.*, diversionary tactics, sniper fire, blocking the access road, and sabotage of other plant components). Other findings state that the response force is not impeded by failures and breakdowns that should be

¹³⁶ The applicant assumes in its analysis that the responders would win because of their numerical superiority over the intruders. Medcalf, Tr. 1574, 1788.

¹³⁷ In his proposed findings, Governor Brown states that applicant's intention for Chapter 11 was to "demonstrate that its security arrangements provide high assurance of protection against the design basis threat." Gov. Proposed Findings at 20. Indeed, one of the purposes of Chapter 11 stated in NUREG-0416 (n.134, *supra*) is "to demonstrate that the physical security system shall satisfy the general performance requirement." Thus, Governor Brown's interpretation of the goal of Chapter 11 and, hence, the great importance he places on its adequacy, are not entirely unreasonable. We have seen, however, that NUREG-0416 goes on to specify that the intent of the chapter may be satisfied by the use of a simple analytical technique such as EASI (p. 100, *supra*), and that the staff placed little emphasis on Chapter 11 in its review of the security plan. This is entirely consistent with the provisions of Section 73.55(a), which indicate that the general performance objective for security systems is normally satisfied once the requirements of Section 73.55(b) through (h) are met. Governor Brown's interpretation of the purpose of Chapter 11 establishes a much higher standard of acceptability for that portion of the Security Plan, and would seem to require extensive "war gaming" before the plan could be approved by the staff.

expected in any real life system. Gov. Proposed Findings at 28-29. We agree that these factors and possibly many others, could enhance the severity of an assault. But the assault scenarios described in Chapter 11 permit the intruders to move directly to their primary target.¹³⁸ In each case, the chronological sequence of the intrusion begins after the attackers have negotiated the protected area fence without detection and have triggered the [†]. Assessment of the threat is [†]. Medcalf, Tr. 1574, 1788. [†].

Similarly, SLOMFP's proposed findings are critical of the fact that time of day and weather conditions were not taken into account. SLOMFP Proposed Findings at 7-8. In actuality, these factors play no part in the response to the Chapter 11 scenarios. [†]. PG&E Panel, fol. Tr. 1584, pp. 2-3; Rose, Tr. 2182. [†]. Dettman, Tr. 1637-8.

Failures of humans and equipment surely will occur, but they have not been provided for on either side in Chapter 11. Given the redundancy of the communications and intrusion alarm networks (see pp. 88-89, 93-96, *supra*), the guards' training, and their "at home" advantage (Taylor, Tr. 2283), it would appear that random failures, if included in the analyses, would favor the response force rather than the intruders. Similarly, the intruders are undertaking a more complex set of tasks than the responders. The only "real-life" factor which squarely favors the intruders under the terms of the design basis threat is that of surprise, for they know when and how they will attack, and the responders of course do not. But, in light of the Diablo Canyon surveillance systems, the intruders could not confidently rely on achieving surprise. See pp. 95-96 [†], *supra*.

We conclude that Chapter 11 does illustrate the integrated functioning of the security system under attack conditions, and therefore serves its intended purpose. We also find that the scenarios presented there, while neither perfectly realistic nor exhaustive in their consideration of possible attack variations, do not reveal any systematic weaknesses in the integrated functioning of the security system or an inability of that system to provide high assurance of protection against the design basis threat.

2. Subissues 1(c)(iii) and (v) challenge the range of threats posed by an insider and question whether applicant's analysis of those threats is adequate. Like the external threat, the internal threat is delineated by 10 CFR §73.1(a)(1). The design basis insider threat is limited to one employee, although that person is presumed to be knowledgeable about plant activities and may either actively or passively participate in any sabotage attempt.

The applicant's initial protection against an insider is the company's employee screening process applicable to all PG&E operating personnel. That program is designed to ensure that only qualified persons who are physically and mentally suited to work in a nuclear power plant are employed at Diablo Canyon. In

¹³⁸ [†].

addition, all operating personnel receive ongoing performance evaluations consistent with accepted industry standards. App. Ex. S-64, p. 1-2 and Appendix E. The applicant also carefully screens all security force members. We have previously described that screening program and need not repeat it. See p. 83, *supra*.

Because no screening program can be totally effective, applicant's security system is designed to minimize the opportunities available to any plant employee to commit radiological sabotage or effectively assist any such sabotage attempts by external intruders. [†]. (see p. 95 [†], *supra*) [†]. (see p. 95 [†], *supra*) all reduce the possibility that a lone insider or one working in concert with external intruders may successfully commit radiological sabotage. Finally, all members of the operating crew as well as security force members are trained to be alert to such things as unauthorized access to plant areas. Patterson, Tr. 1795-96. Thus, these components of the applicant's security system, combined with all the other parts of the system, ensure adequate protection against the possible range of insider activities at Diablo Canyon.¹³⁹ See also n.125 [†], *supra*.

3. Subissue 1(d) challenges the adequacy of applicant's preparation to deal with situations where individuals are taken hostage by persons threatening the facility. Intervenor SLOMFP's proposed findings of fact, following its witness's testimony at the hearing, state that PG&E has not enunciated a specific hostage policy of non-negotiation at Diablo Canyon. Such a policy is important to put prospective intruders on notice of what they may expect and to eliminate response to hostage situations based on emotional considerations. Taylor, fol. Tr. 2213, pp. 15-17.

Applicant's procedure for dealing with hostage situations, SP-613(S), was marked for identification at the hearing. Tr. 2141.¹⁴⁰ [†]. Robert B. Manili, Tr. 2143-44. [†]. Shiffer, Lunsford, and Patterson, Tr. 2880-82. [†]. *Id.* [†]. Gaskins, Tr. 2149.

[†]. We conclude that applicant's security procedure, although not expressed in the security plan itself,¹⁴¹ forms an effective and reasonable policy for the hostage situation.

K. Staff [†] in the Number of Armed Responders

Section 73.55(h)(3) of the Commission's regulations states that

[t]he total number of guards, and armed, trained personnel immediately available at the facility . . . shall nominally be ten (10), unless specifically

¹³⁹ Although the scenarios employing an insider set forth by applicant in Chapter 11 of the security plan do not encompass all possible insider actions, these scenarios are representative of the actions of both a knowledgeable passive insider without access to vital areas and the actions of a knowledgeable active insider with access to vital areas assisting the external attackers. App. Ex. S-64, pp. 11-4 to 11-7.

¹⁴⁰ See Gov. Ex. S-7.

¹⁴¹ [†]. (App. Ex. S-63, p. 16) [†].

required otherwise on a case by case basis by the Commission; however, this number may not be reduced to less than five (5) guards.

In the statement of considerations accompanying the regulations, the Commission explained that it would evaluate a number of factors in determining whether a particular security force would be required to have more or less than the nominal number of ten guards; and these factors represent one instance in the security regulations where site-specific features are to be taken into account. The Commission then listed the following eleven items:

(a) selection, training and motivation of response force; (b) availability and construction of defensive positions; (c) availability and knowledge of weapons and other equipment; (d) individual site considerations, including size, topography, configuration, geography, weather, and number of nuclear power plant units; (e) location and reliability of initial detection devices; (f) consideration of Local Law Enforcement Agencies' response; (g) vital area hardening, including plant design, location of and access control to vital areas; (h) design and construction of protected area barriers; (i) redundancy of security systems; (j) initial clearance and continuing reliability assessment of personnel; and (k) security and contingency procedures.¹⁴²

In other words, the regulations mandate ten armed responders in every case unless a staff evaluation applying these eleven factors to a plant and its security system and organization affirmatively establishes that a lesser number is adequate or a greater number is necessary.

Governor Brown posits proposed findings that the staff [†] armed responders at Diablo Canyon is unwarranted on the present record. Gov. Proposed Findings at 63-69. The staff's proposed findings gloss over this issue and assert that the question of the size of the armed response force at Diablo Canyon is beyond the scope of any of the consolidated issues. Staff Proposed Findings at 12, n.7. Interestingly, however, the staff took the opposite position at the hearing. There the staff introduced direct testimony on Consolidated Issue 1(c)(i) attempting to [†] armed responders at applicant's facility. Miller, fol. Tr. 1911, p. 10-11.¹⁴³

Contrary to the staff's assertion in its proposed findings, the size of the armed response force at Diablo Canyon is a vital part of the "safeguard systems" as that

¹⁴² 42 *Fed. Reg.* 10836, 10837 (February 24, 1977).

¹⁴³ The staff's stated purpose for this portion of the direct testimony was to demonstrate that the applicant had prepared to meet the design basis threat by meeting the requirements of 10 CFR §73.55(b)-(h) or, alternatively, by providing equivalent protection where any particular requirement was not followed. The staff identified its [†] armed responders as one area where applicant did not meet the regulatory requirements and then sought to justify this [†]. Miller, fol. Tr. 1911, pp. 8-11. The staff's sanctioning of [†] armed responders was explored on cross-examination of the staff's witness by both intervenor SLOMFP and Governor Brown without objection by the staff. Tr. 2040-42, 2110-15.

term is used in Consolidated Issue 1(c). Accordingly, the [†] armed responders at applicant's facility is squarely within the scope of that issue. Because 10 CFR §73.55(h)(3) reserves to the Commission the decision, on a case by case basis, to increase or decrease the number of armed responders at a power reactor, the staff (as the Commission's delegate initially exercising this judgment) had the burden of going forward once the issue was raised by Consolidated Issue 1(c).¹⁴⁴ Here, however, the evidence of record is inadequate to justify the staff's authorization of a [†] armed response force.

In its direct testimony, the staff sought [†] armed responders in consideration of only four of the factors cited by the Commission: "the rugged terrain, the exceptional response time of the on-site response force to reach any position in the protected area, the reliability of the detection systems and the training received by the response force, including their knowledge of the plant layout" Miller, fol. Tr. 1911, pp. 10-11. The recitation of these factors, without more explanation, is not sufficient to [†] applicant's armed response force.

Once a design basis assault on the facility is under way, the terrain would have little pertinence to the ability of the armed responders to repel the attack. Miller, Tr. 2111. On the other hand, the hilly terrain, especially that directly to the east of the facility, might prove advantageous to potential adversaries by providing the classic military high ground as well as an excellent intelligence gathering vantage point. Giuffrida, Tr. 2432-33, 2755-57. Further, we cannot give much credence to the staff's position that the rocky terrain at the site perimeter handicaps intruders because it is "very easy to turn an ankle in that type material; wherein the guard force would not be coming over that type material." Miller, Tr. 2111.

The staff relied on the exceptional response time of the applicant's security force to reach any portion of the protected area, but was unable to explain why the response time at Diablo Canyon was any better than at any other nuclear facility and thus exceptional. Miller, Tr. 2041-42. Moreover, the staff's reliance on response times makes no mention of the fact that there are [†] at Diablo Canyon. [†]. Similarly, we are left to speculate why the staff cited the reliability of the detection systems at Diablo Canyon. Although the [†] network and the other systems augmenting it meet the staff's regulatory guide standards and were specifically selected by applicant for their low false alarm rates (PG&E Panel, fol. Tr. 1584, p. 25), we have not been informed of anything exceptional about the applicant's system relative to the detection systems at other facilities.

The staff's reliance on the training of applicant's security force is also tenuous. At the time of the hearing the staff had considered only the applicant's Regulatory

¹⁴⁴ The applicant proposed no findings of fact on this issue and even ignored it in responding to Governor Brown's findings.

Guide 5.20 training program — a program which we have found inadequate in the face of the design basis threat of 10 CFR §73.1(a)(1). See p. 86, *supra*. Thus, at that training level, we cannot accept the staff's dependence on training to [†] applicant's response force.

The staff also offered into evidence its Security Plan Evaluation Report (SPER) for Diablo Canyon. Staff Ex. S-1. That report states the staff's conclusion that [†] armed responders are sufficient to provide high assurance protection. *Id.* at 5-6. Instead of analyzing applicant's facility in light of the eleven factors identified by the Commission, however, the SPER merely lists ten of the eleven factors.¹⁴⁵ It then states that a "review of the factors above and principally, the size of the site, the construction of the vital areas, and the response capability of Local Law Enforcement Agencies . . ." led the staff to [†] armed responders. *Id.* at 6.¹⁴⁶ The SPER does not explain how any of the ten factors influenced the staff's determinations. We are not informed how the size of the applicant's site weighed in the staff's judgment, but note that the large uninhabited area of the plant site and beyond would seem to give rise to the possibility of an adversarial force gathering near the site without being detected. Giuffrida, Tr. 2553-54. Similarly, we must guess as to what vital area construction features the staff relied upon to reach its judgment, and why those features are important. There is little in the record to suggest that there is anything unique about the construction of Diablo Canyon that would offer an unusual advantage to the armed responder force, and the staff has certainly not pointed to any such evidence.

The third factor mentioned in the SPER is the response capability of the local law enforcement agencies. Again, there is no explanation of how LLEA response would warrant a reduction in guard force size. We have found the response commitments of LLEA to be adequate. See pp. 91, 93, *supra*. The fact remains, however, that the Diablo Canyon plant is seven miles from the nearest county road at Avila Gate¹⁴⁷ and from that gate it is at least as far again to the nearest LLEA facility.¹⁴⁸ Applicant has given the initial LLEA response time to be [†] a value we believe is optimistic based on the geography of the area and the type of roads involved.¹⁴⁹ Also, this estimate takes no account of adverse weather conditions. Lunsford, Tr. 1569-70. Finally, the record makes clear that it is the

¹⁴⁵ The SPER makes no mention of the second factor listed by the Commission (see p. 99, *supra*) concerning availability and construction of defensive positions.

¹⁴⁶ [†]. App. Ex. S-64, Appendix A, p. A-5.

¹⁴⁷ App. Ex. S-62, p. 2-1.

¹⁴⁸ App. Ex. S-62, Appendix B.

¹⁴⁹ [†]. App. Exhibit S-62, Appendix B. No actual tests of this response have been made by applicant. Lunsford, Medcalf and Dettman, Tr. 1831-32.

Indeed, the company also recognizes the optimistic nature of this [†] for in its manual prepared for distribution to LLEA personnel it states: "The response time for personnel from the [†] will vary, depending on the location of the units, but in no case should exceed [†] from the time the call is placed until they are on site." Gov. Ex. S-1, Preface.

guard force that must meet and neutralize any intruding force and that the staff gives no credit for assistance by the LLEA in protecting against acts of sabotage. See p. 93, *supra*. Given these facts together with the isolated location of the plant, we fail to see how the LLEA response factor favorably influenced the staff's decision [†] armed response force.¹⁵⁰

As the Commission's delegate, the staff has the authority to change the size of the armed responder force, up or down, from the nominal value of 10. This must be done after an analysis of the applicant's facility in light of the factors identified by the Commission. Although two different sets of factors have been cited by the staff as providing justification for requiring [†] armed responders at Diablo Canyon, the record analysis in support of these factors is insufficient. It may well be that a force of [†] armed responders is adequate, but the staff simply has not made a case for such [†]. Until such time as the staff can adequately and convincingly demonstrate to the Director of Nuclear Reactor Regulation that the size of the armed response force at Diablo Canyon should be [†] must be required.¹⁵¹

V. CONCLUSION

Based on our review of the entire record in this proceeding and upon the foregoing factual and legal determinations, and subject to the conditions and exceptions noted herein, we conclude that the applicant's security plan conforms with all applicable provisions of the Atomic Energy Act of 1954, as amended, and the Commission's security regulations. Specifically, the applicant's physical protection system and security organization are adequate to meet the design basis threat of radiological sabotage and provide high assurance that activities involving special nuclear material at Diablo Canyon will not be inimical to the common

¹⁵⁰ [†]. App. Ex. S-62, p. 1-12. With the exception of the last, applicant's justifications are the same as those given by the staff and therefore would provide no support for the staff's decision. The applicant's reliance on its safeguards contingency procedures would not, standing alone, provide a [†] armed responders from the nominal ten. In any event, the staff did not and could not point to this factor in [†] in the Diablo Canyon response force. Because the applicant's detailed procedures are not submitted to the staff as part of the contingency plan, the staff witnesses at the hearing repeatedly indicated it was the responsibility of the Inspection and Enforcement Division staff to ensure the adequacy of such procedures. It would have been anomalous for the NRR staff, on the one hand, to have disclaimed responsibility for reviewing such procedures and, on the other, relied upon such procedures to support its determination [†] applicant's armed response force.

Revision 10 of applicant's security plan does not reiterate the justification set forth in Revision 9 for employing [†] response force personnel.

¹⁵¹ Inasmuch as the additional trained armed responders may not be available immediately, during the pendency of the fuel loading and low power testing license (*i.e.*, prior to full power operation) the applicant may operate with a [†] response force if it can provide, through alternative measures acceptable to the Director, a force equivalent to [†] trained armed responders.

defense and security and will not constitute an unreasonable risk to the public health and safety.

The applicant must complete its Appendix B training and qualification plan prior to full power operation and its operating license must be conditioned accordingly. See pp. 86-88, *supra*. In addition, applicant must employ [†] armed responders at Diablo Canyon unless or until the staff adequately justifies to the Director of Nuclear Reactor Regulation a [†] in that number. See p. 107 [†], *supra*.¹⁵²

Any proposed findings of fact or conclusions of law not adopted herein are either rejected or are immaterial to our decision. Within 15 days after service of this decision, any party may file a petition for review with the Commission pursuant to 10 CFR §2.786(b). Any other party may, within 10 days after service of a petition for review, file an answer opposing Commission review. Effectiveness of this decision will be determined by the Commission pursuant to 10 CFR §2.764 in conjunction with its effectiveness review of LBP-81-21, 14 NRC 107 (1981).¹⁵³

It is so ORDERED.

FOR THE APPEAL BOARD

Barbara A. Tompkins
Secretary to the
Appeal Board

The Appendix has been deleted from this publication but can be found in the NRC Public Document Room, 1717 H Street, NW, Washington, D.C. 20555.

¹⁵² Finally, we wish to reiterate our recommendations that applicant clarify its security plan concerning escorts for vehicles entering the protected area (see n.130 [†], *supra*) and develop procedures to utilize the assessment capabilities of its computer system to provide additional protection against the insider threat (see n.125 [†], *supra*).

¹⁵³ See the Commission's Order of July 22, 1981.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gillinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of

Docket No. 50-358

**CINCINNATI GAS AND ELECTRIC
COMPANY, et al.**

**(Wm. H. Zimmer Nuclear Power
Station, Unit No. 1)**

July 30, 1982

The Commission directs the Licensing Board to dismiss certain contentions from this operating license proceeding which the Board admitted as Board issues pursuant to its *sua sponte* authority under 10 CFR 2.760a.

**LICENSING BOARDS: REOPENING OF PROCEEDINGS (NEW
CONTENTIONS)**

After the record is closed in an operating license proceeding, where parties proffering new contentions do not meet the legal standards for further hearings, that the contentions raise serious issues is insufficient justification to reopen the record to consider them as Board issues when they are being dealt with in the course of ongoing NRC investigation and staff monitoring.

ORDER

On July 15, 1982 the Atomic Safety and Licensing Board presiding in this proceeding issued a Memorandum and Order (LBP-82-54, 16 NRC 210) in which it exercised its *sua sponte* authority under 10 CFR §2.760a to admit as Board issues

eight new contentions. These contentions generally relate to the status of quality assurance pertaining to the construction of the Zimmer Station and the corporate character and competence of the lead applicant to operate a nuclear generating station. The Board, noting that the NRC staff supported a hearing on the eight contentions, found that "the proposed contentions raise issues which are indeed serious" (*Id.* at 214).

The Commission agrees with the Board that issues outlined in the contentions are indeed serious. The Commission has already indicated that it assigns great importance to the investigation of quality assurance conditions at the Zimmer plant. On June 7, 1982, the Commission was briefed by the Administrator of Region III, Mr. Keppler, on the status of the investigation. On June 16, the Commission held a public meeting with representatives of the lead applicant to allow them to brief the Commission on ongoing quality assurance matters related to the Zimmer project. The Commission also heard from representatives of the Government Accountability Project, which has been involved as counsel for some who maintain a concern about the status of the Zimmer project. The Commission has directed the NRC staff that it wishes to be kept fully informed in order that it can provide guidance and direction when needed.

The NRC has been investigating alleged quality assurance irregularities at Zimmer since January 1981. The investigations are still ongoing. The investigations have identified a number of quality assurance-related problems at the Zimmer site. An extensive review of the as-built plant is currently being performed. Before the plant can be licensed, a comprehensive quality confirmation program will have to be conducted and identified problem areas resolved. By itself, without factoring in any rework, the quality confirmation program will be both costly and time-consuming. The effect of this on the construction schedule of the plant remains to be determined.

The basis for the eight contentions which the Board has accepted as Board issues is simply a repetition of some of the problems revealed in the reports of the investigations which have already been released to the public. The Miami Valley Power Project (MVPP), an Intervenor, which filed an untimely request with the Board that these issues be considered, suggested that it had new information on these matters. MVPP did not in its motion to the Board or elsewhere sufficiently identify any new information, its source, or say when it became available. The NRC staff supported the motion to reopen. However, the staff recognized and the Board ruled that the legal standards for further hearings were not met.

As we have indicated above, the issues raised in the eight contentions are being dealt with in the course of the ongoing investigation and in the NRC staff's monitoring of the applicants' Quality Confirmation Program.

For these reasons, the Commission concludes that the Board has not set forth a sufficient justification supporting its order reopening the hearing record to consider the eight contentions as Board issues. Accordingly, the Board is directed to

issue an appropriate order dismissing the eight contentions from the proceeding. Commissioners Gilinsky and Asselstine dissent from this decision. The separate views of individual Commissioners will follow.

It is so ORDERED.*

For the Commission

John C. Hoyle
Acting Secretary of the Commission

Dated at Washington, D.C.,
the 30th day of July, 1982.

SEPARATE VIEWS OF CHAIRMAN PALLADINO

I do not agree with Commissioner Asselstine's statement of reasons, concluding that the eight contentions should be pursued through further hearings. Further, I am particularly distressed by what he characterizes as the "serious and unfortunate consequences" of our decisions.

I would stress the detailed independent investigation that is ongoing at Zimmer. This is how facts are ascertained in most issues involving continuing allegations. Our intent is not only to determine the facts but to see that corrective actions are taken where the facts show such actions are needed.

Commissioner Asselstine argues that our decision "denies the public an opportunity to participate further in our regulatory process on these significant safety matters." Dissenting Opinion of Commissioner Asselstine at 118, *infra*. I do not understand this statement.

The very basis of *sua sponte* authority is to permit Boards to address issues which the parties to a proceeding have *not* properly raised. In this case, the Board itself concluded that further public participation (*i.e.*, further hearings) could not be justified on the basis of the applicable legal standards. If our *sua sponte* decision is to be judged as lacking because it does not foster public participation, then our legal standards which govern such participation lose their content, and the public is erroneously led to believe that its rights have been unfairly restricted.

*Commissioner Gilinsky was not present when this Order was affirmed, but had previously indicated his disapproval. Had Commissioner Gilinsky been present he would have affirmed his prior vote.

Commissioner Asselstine also argues that our decision may eliminate *sua sponte* authority for the Boards. *Id.* at 118. This was not my intent. Decisive for me was the level of staff and Commission involvement in the Zimmer quality assurance problems which predated the eight contentions that were advanced by the intervenor in this case.

Finally, Commissioner Asselstine argues that the Boards will interpret our decision as a repudiation and, perhaps, as a criticism. *Id.* at 119. I would hope that the Boards would reject immediately this view of our decision. Just as the Board attempts in each case to render correct decisions, so does the Commission, and the Commission's disagreement with the Board decision in this case is not intended to carry implications for other cases, as for example, where the facts about investigations underway are different.

SEPARATE VIEWS OF COMMISSIONER GILINSKY

The quality assurance problems at the Zimmer site require thorough investigation and must be remedied before this plant can qualify for a license to operate. In principle, this inquiry could be conducted either by the NRC staff, acting alone, or by means of an adjudicatory proceeding before the Licensing Board. In practice, however, and especially in view of the history of this project, the adjudicatory proceeding proposed by the Licensing Board is important for assuring a thorough investigation of the breakdown in quality assurance. Although this is not the most efficient means of handling this matter, it will be needed until the Commission and the NRC staff deal with quality assurance more effectively.

ADDITIONAL VIEWS OF COMMISSIONERS AHEARNE AND ROBERTS

We strongly support this order but, being convinced it will be misinterpreted, we believe a few words of explanation are needed. The heart of this order and this issue is the question of the appropriate roles of the Boards and of the NRC staff in the regulation of nuclear power.

Both the staff and Board favored reopening the record because of special circumstances, although both agreed the intervenor had not met whatever burden is appropriate. (In particular, the intervenor did not appear to have any good reason for raising the issues at this late date. The primary basis for the intervenor's motion is work done by the staff and applicant which has been available for some time.)

As explained by the staff:

"[T]here are special circumstances in this case which cause the Staff to support reopening the record. The safety issue which MVPP has raised is a most serious one. It is an issue which must be explored in sufficient depth to permit a confident judgment on it before reactor operation is licensed.

. . .

". . . [T]he breakdown in the Applicants' quality assurance program which has resulted in construction defects, and which, in the course of the ongoing investigation, may result in the discovery of more construction defects at the Zimmer plant raises a serious safety question. The information regarding the extent of the construction defects has the potential for resulting in the possible denial of an operating license."¹

As explained by the Board:

"[A]s we have noted, this state of affairs is not ordinary. As Staff points out, the proposed contentions raise issues which are indeed serious. A decision adverse to Applicants could dictate the denial of an operating license. The Staff has identified Zimmer as a plant with a serious quality assurance breakdown. (Testimony of William J. Dircks before the Subcommittee on Energy and the Environment of the Committee on Interior and Insular Affairs, U.S. House of Representatives, November 19, 1981.) Fines have been imposed by Staff and paid with respect to this breakdown. The Commissioners were recently briefed on this situation by Applicants and MVPP, indicating the continuing concern about the matter."²

We can agree with the serious nature of the quality assurance issue at Zimmer. That is why there have been continuing staff investigations and review, and that is why the Commissioners have shown a "continuing concern." However, we do not agree that these circumstances by themselves justify holding a hearing.

The staff argued:

"The earlier finding of a breakdown in the Applicant's quality assurance program reached in the Region III investigation has been widely disseminated in the Cincinnati area. The public interest in having this serious safety issue litigated in the open and thereby affording the public the opportunity to be fully apprised on the matter warrants the exercise of the Board's discretion to reopen the record."³

¹ "NRC Staff Response to Miami Valley Power Project Motion for Leave to File Contentions" at 4-5 (June 11, 1982).

² "Memorandum and Order (MVPP's Motion for Leave to File New Contentions)," LBP-82-54, 16 NRC 214 (1982).

³ NRC Staff Response at 5. Commissioner Asselstine states the review by the Commissioners and the staff "can benefit from the searching review and resolution of these factual disputes that can result from a formal adjudicatory proceeding. Indeed, the NRC staff itself recognized as much. . . ." The staff does not appear to be arguing that the review would be benefited, rather there is a "public interest" in litigating for the benefit of the public.

However, we do not agree it is appropriate to hold a *hearing* simply to inform the public. First, it is not a very effective way of informing the general public. Second, it is a very costly way to achieve an objective that can be met by holding more informal public meetings.

The Board found:

“[W]e agree with the Staff’s assessment that the public interest requires reopening of the record to litigate these contentions. We believe that this consideration overrides legal niceties pertaining to acceptance of untimely contentions and reopening of records. Consequently, we are exercising our authority pursuant to 10 CFR §2.718(j) and 2.760a to reopen the record and admit the eight contentions advanced by MVPP as Board-raised issues.

. . . .
“ . . . [W]e believe that a full public airing of this matter will not only contribute to public confidence, but will also strengthen the QA program. Subjecting this program to the scrutiny of the Commission’s adjudicatory process can only contribute, not detract, to reasonable assurance that the public health and safety will be protected.⁴

We disagree with the Board — not because of “legal niceties” but because of our views on the proper role of the Board and of the staff. We believe the primary role of the Board is to adjudicate issues in dispute raised in the hearing process. We do not believe the role of the Board is to address as a technical review body every potential problem. The large technical staff of the NRC is charged with reviewing, monitoring, inspecting and enforcing actions for nuclear power reactors. The taxpayer provides a very large amount of funds (over \$450 million per year) to support over 3000 staff members of the NRC whose primary function is to insure that the health and safety of the public are protected in the use of commercial nuclear power.

In a case like this where serious issues have been raised with regard to a plant involved in the review process for an operating license, the NRC staff devotes a large amount of time and effort to resolving those issues. Region III is doing that. The Commission itself has become heavily involved, receiving numerous briefings on the case and providing substantive guidance to the Region. This is as it should be. The allegations will be fully addressed and the appropriate and necessary action taken. A Board is not needed in this case.

Consequently, we do not believe that reopening the hearing at this late date to address these contentions is the right use of NRC resources.

In response to Commissioner Asselstine’s comments, we appear to have some fundamental differences in approach as well as a clear difference of opinion as to

⁴ LBP-82-54, 16 NRC 214 (1982). The Board also found it significant that the staff asserted the need for a hearing.

the roles of the Board and staff. First, we believe the hearing process was never intended to be a continuing, open-ended forum for public participation. In this decision the Commission was dealing with participation by an intervenor, not the public as a whole, under circumstances in which the Board found the intervenor was both untimely in raising the issues and had no excuse for being untimely.⁵ Second, Commissioner Asselstine concludes “a full airing of these issues in the hearing would likely strengthen the QA program and would contribute to reasonable assurance that the public health and safety will be protected” and that adjudicatory hearings would be a “particularly effective means” of resolving the QA issue. This judgment has been and continues to be subject to considerable debate. We continue to believe formal legal procedures add little to the effectiveness of the review of technical issues. Perhaps as a lawyer Commissioner Asselstine places a higher value on the legal process.⁶

DISSENTING OPINION OF COMMISSIONER ASSELSTINE

In general, I believe that the most useful and effective role to be served by our adjudicatory licensing hearings is to resolve those issues that are properly in controversy between the parties to the proceeding. I therefore do not view our Atomic Safety and Licensing Boards as a separate layer of technical review over all questions that may arise with respect to a particular application. For this reason, I support Commission review of decisions by our Licensing Boards to exercise their *sua sponte* authority pursuant to 10 CFR section 2.760a — the authority to admit contentions to be addressed in the hearing that have not been properly raised by a party to the proceeding if the Board determines that a serious safety, environmental, or common defense and security matter exists.

However, I strongly disagree with the conclusion of the majority of the Commission in this case that the Board has not set forth a sufficient justification supporting its order reopening the hearing record to consider as Board issues the

⁵ This is not a case in which the staff was reluctant to bring the issue to the attention of the Board and parties. The NRC staff kept the Board and parties informed of its concerns through Board Notifications beginning at least as early as July 1981 (BN-81-41 concerning an Immediate Action Letter issued by the staff regarding Zimmer QA practices).

⁶ Commissioner Roberts would note, however, the statement of Judge Marvin E. Frankel:

“That the adversary technique is useful within limits none will doubt. That it is ‘best’ we should all doubt if we were able to be objective about the question. Despite our untested statements of self-congratulation, we know that others searching after facts — in history, geography, medicine, whatever — do not emulate our adversary system. We know that most countries of the world seek justice by different routes. What is much more to the point, we know that many of the rules and devices of adversary litigation as we conduct it are not geared for, but are often aptly suited to defeat, the development of the truth.”

M. Frankel, *The Search for Truth: An Umpireal View*, 123 U.Pa.L.Rev. 1031, 1037 (1975).

eight contentions proposed by the Miami Valley Power Project (MVPP), an intervenor in this proceeding. For the reasons set forth in detail below, I believe that the Board and the NRC staff were correct in their judgment that "the public interest requires reopening of the record to litigate these contentions." (LBP-82-54, 16 NRC 214 (1982)). In particular, I believe that this is a case in which the Commission would benefit greatly from the full airing of these eight contentions in this adjudicatory hearing. I therefore would have allowed the Board to reopen the proceeding and to pursue as Board issues the eight contentions proposed by MVPP relating to the quality assurance (QA) situation at the Zimmer Nuclear Power Station, Unit 1.

There are five reasons for my conclusion that the Board should have been allowed to pursue these eight contentions in this proceeding. First, from the standpoint of the public health and safety, these contentions related to the Zimmer construction quality assurance program are particularly significant. The NRC staff itself, in supporting reopening the record of the proceeding to consider these eight contentions, stated:

The safety issue which MVPP has raised is a most serious one. It is an issue which must be explored in sufficient depth to permit a confident judgment on it before reactor operation is licensed. NRC Staff Response to MVPP Motion for Leave to File Contentions, pp. 4-5.

In addition, James G. Keppler, our Regional Administrator for the region in which the Zimmer plant is located, testified on June 10, 1982, before the House Interior and Insular Affairs Committee that:

By the end of March 1981 we determined that there was a serious breakdown in the controls for assuring quality at Zimmer. At that time serious consideration was given to suspending construction activities.

As these and other statements by the Commission and the NRC staff make clear, the quality assurance breakdown at the Zimmer plant, the adequacy of the corrective measures being taken by the applicant, and the implications of the QA situation at Zimmer for the Commission's decision on whether to issue an operating license for the plant, are all serious safety matters that deserve the most careful attention.

Second, the eight contentions contain clear issues of fact that are in dispute between the parties to the proceeding and that have not yet been resolved by the Commission or the NRC staff. These issues include: whether the plant has been constructed in conformance with the Commission's regulations; whether the applicant's quality assurance program is sufficient to identify and correct construction deficiencies for the plant; whether the applicant's Quality Confirmation Program is adequate to address the quality assurance breakdown at Zimmer, and whether the applicant possesses the necessary qualifications and competence to operate the plant safely.

In that regard, this case is far different from the usual *sua sponte* case in which the Board elects to raise issues of interest to the Board that have not been proposed by any party. Here, the eight contentions were first advanced by a party to the proceeding and were only admitted as *Board* issues pursuant to 10 CFR section 2.760a when the Board concluded that MVPP had failed to show good cause for not raising these issues earlier in the proceeding. The strong interest and involvement of the parties in these issues argues for approval of the Board's action in this case.

Third, I believe that the Commission would benefit from having these issues addressed by the Board and by the parties through our adjudicatory process. Ultimately, the Commission must rule on each of the issues raised by the MVPP contentions. I agree with the Board that a full airing of these issues in the hearing would likely strengthen the QA program and would contribute to reasonable assurance that the public health and safety will be protected. (LBP-82-54, 16 NRC 214 (1982)). Adjudicatory hearings, through the use of discovery, the presentation of prepared testimony and the conduct of cross-examination, can serve as a particularly effective means for resolving the complex factual disputes that exist with respect to the Zimmer quality assurance situation. More informal review by the Commissioners, and even the dedicated efforts of the NRC staff to address the Zimmer QA breakdown, which I strongly support, can benefit from the searching review and resolution of these factual disputes that can result from a formal adjudicatory proceeding. Indeed, the NRC staff itself recognized as much and strongly supported the Board's reopening of the proceeding to address these contentions. The record that would be produced by such a hearing would be of great value to the Commission in reaching its decision on whether to issue an operating license in this case.

Fourth, I believe the public participants in this proceeding deserve an opportunity to have these issues addressed in the hearing — to present their evidence and to test the sufficiency of the evidence presented by the other parties. I believe that opportunity is particularly important in this case given the fact that the failure on the part of the NRC staff to identify the breakdown of the applicant's quality assurance program earlier in the construction process raises questions regarding the adequacy of our own regulatory program for construction quality assurance. If, in the circumstances of this case, the public participants are not given an opportunity to raise serious safety issues such as these, then it is difficult to conclude that they have been given a meaningful opportunity to participate in the proceeding.

Finally, I believe that the Board's decision to reopen the proceeding would probably not lead to delay in a Commission decision on whether to issue an operating license in this case. A full airing of these issues in the hearing may well produce information that will assist the Commission in reaching a decision. In addition, as the Commission has noted in its most recent report to Congressman Beville, it appears to the Commission that the applicant's construction completion

projection for this plant is overly optimistic, and it is doubtful that work on the Zimmer plant will be sufficiently complete by December 1982 to permit a Commission decision on whether to issue a full-power license. (July 30, 1982, letter to Congressman Beville, Table 1, fn. 16).

For the foregoing reasons, I disagree with the majority's conclusion that the Board has not set forth a sufficient justification supporting its order to reopen the hearing record to consider the eight contentions as Board issues.

Apart from these considerations, I believe the majority's decision has several serious and unfortunate consequences regarding public participation in our proceedings, the future of any *sua sponte* authority by our Licensing Boards, and the effective functioning of the Boards. With regard to public participation, the majority's decision effectively denies the public an opportunity to participate further in our regulatory process on these significant safety matters. For years, we have heard the charge that the Commission's regulatory process denies members of the public the opportunity to raise and to have resolved in the Commission's licensing hearings important safety questions. One unfortunate consequence of the majority's decision is that it lends at least some validity to that claim. Indeed, stripped to its barest essentials, the majority's ruling stands for the proposition that these serious safety issues should not be addressed by our public hearings and instead should be left to the NRC staff and the Commission for resolution. The majority's attitude that the public must simply trust in the agency's ability to address the Zimmer quality assurance breakdown, particularly given the past failings of our own regulatory program in identifying these quality assurance problems, cannot help but breed public mistrust of the agency. This public mistrust is dangerous for both the NRC and the industry it regulates. For, if the public lacks confidence in the fundamental fairness of our hearing process, it cannot help but question the adequacy of our regulatory program and the safety of the activities we regulate.

The majority's decision also has serious implications for the future use of *sua sponte* authority by our Licensing Boards. If the Commission will not countenance the Board's exercise of *sua sponte* authority in this case, where the issues involve serious safety matters, where those issues constitute factual disputes between the parties, and where the potential for delay is limited, it is difficult to conceive of a case in which the Commission majority would approve a Board's use of *sua sponte* authority. Thus, the majority's ruling may well eliminate, for all practical purposes, the *sua sponte* authority of the Boards.

Finally, I believe that the majority's decision will have unfortunate and profound consequences for the future operation of our Licensing Boards. This is the second decision by this Commission majority in as many weeks to constitute a direct repudiation of the actions of our Boards. Over the years, there has been considerable criticism of the quality and effectiveness of our Licensing Boards. In large part, I believe this criticism reflects a lack of appreciation for the difficulty of

their task. Actions by the Commission, such as that taken by the majority in this case, will only add to this difficulty and will hardly foster further improvement in the performance of our Boards. Given these unfortunate consequences, as well as the reasons set forth above, I would have allowed the Board to pursue the eight contentions proposed by MVPP in this case.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Thomas S. Moore, Chairman
Dr. W. Reed Johnson
Gary J. Edles

In the Matter of

Docket No. 50-201-OLA

NUCLEAR FUEL SERVICES, INC.
and NEW YORK STATE ENERGY
RESEARCH AND DEVELOPMENT
AUTHORITY
(Western New York Nuclear
Service Center)

July 8, 1982

The Appeal Board affirms a Licensing Board order (LBP-82-36, 15 NRC 1075 (1982)) denying an intervenor's request for a hearing on an amendment to the operating license for a spent fuel reprocessing and waste disposal center in light of special statutory provisions governing administration of the center (the amendment had set conditions for the termination of the co-licensee's responsibilities).

RULES OF PRACTICE: HEARING (AMICUS CURIAE)

The Appeal Board will allow amicus participation in a hearing where the Board believes it will assist resolution of the issues and will not prejudice the rights of the parties. See, *e.g.*, *Consumers Power Company* (Big Rock Point Nuclear Plant), ALAB-636, 13 NRC 312, n.2 (1981).

**NRC: AUTHORITY (HEARING UNDER WEST VALLEY
DEMONSTRATION ACT)**

Under the West Valley Demonstration Project Act, Pub. L. No. 96-368, 94 Stat. 1347 (1980), the Commission's review of the Department of Energy's (DOE's) demonstration waste solidification plan at West Valley is limited to informal, consultative procedures; the Commission cannot therefore explore DOE's administration of the waste solidification project in a formal evidentiary hearing.

APPEARANCES

Dr. Irwin D. J. Bross, Buffalo, New York, *pro se*.

Messrs. Carmine J. Clemente and Howard A. Jack, Albany, New York, for licensee New York State Energy Research and Development Authority.

Messrs. George L. Edgar and O. S. Hiestand, Washington, D.C., for licensee Nuclear Fuel Services, Inc.

Mr. Warren E. Bergholz, Jr., Washington, D.C., for *amicus curiae* United States Department of Energy.

Mr. James R. Wolf for the Nuclear Regulatory Commission staff.

MEMORANDUM AND ORDER

I. BACKGROUND

This case involves an appeal by Dr. Irwin D. J. Bross of a Licensing Board decision denying his request for a hearing on an amendment to the operating license for the Western New York Nuclear Service Center.

Nuclear Fuel Services, Inc. (NFS) and the New York State Energy Research and Development Authority (the State) are co-licensees under a license issued in 1966 by the Atomic Energy Commission for the operation of a spent nuclear fuel reprocessing and radioactive waste disposal center in West Valley, New York. In general, the State is licensed as owner and lessor of the site and NFS is licensed to operate the facility and possess radioactive materials and waste. The co-licensees' rights and obligations *vis-a-vis* one another are set forth in a lease and other agreements.¹

¹ The initial term of the lease between the State and NFS expired on December 31, 1980.

Reprocessing activities at West Valley were suspended in 1972 but substantial quantities of liquid high-level radioactive waste remained at the site. By 1976 NFS had decided to withdraw from the reprocessing business and indicated its intention to turn over the facility to the State. Pursuant to the license, however, NFS remained responsible for assuring that the terms of the license were observed until appropriate amendments reflecting the future responsibilities of the co-licensees were obtained. Because of continuing disputes between the co-licensees, no such amendments were sought and the high-level waste remained at West Valley. The State turned to the Federal government for assistance.²

To assist the waste disposal effort, Congress in 1980 enacted the West Valley Demonstration Project Act, Pub. L. No. 96-368, 94 Stat. 1347 (1980), authorizing the Department of Energy (DOE) to carry out a demonstration project involving solidification techniques. To this end, the Act provides that the State will make available to DOE the necessary facilities and high-level waste for completion of the project. It further requires that the State and DOE jointly seek from the NRC a license amendment authorizing the transfer of the facilities. Before undertaking the project, the Act requires DOE to develop a plan for solidification, waste removal, and decontamination, and to submit that plan to the NRC for review. DOE must (i) publish the plan in the Federal Register for public inspection, (ii) publish a notice of the receipt of the NRC's comments and make those comments available for public inspection, and, (iii) publish an explanation in the event DOE rejects any revisions the NRC might suggest. Review of the plan "shall be conducted informally by the Commission and shall not include nor require formal procedures or actions by the Commission pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, or any other law."³ In addition, the statute requires DOE to hold public hearings in the vicinity of the center to inform the local residents about the project and entertain their comments. Lastly, the Act requires DOE to prepare environmental impact analyses in accordance with the requirements of the National Environmental Policy Act (NEPA), 42 U.S.C. 4321.

The instant case involves two license amendments designed to permit the transfer of control of the center to DOE and to resolve the outstanding disputes between the State and NFS. The first amendment — so-called Change 31 — was jointly sought by the State and DOE to authorize the transfer of the West Valley facility to DOE, subject to certain conditions. Under Change 31, DOE is to have exclusive possession until the licensees reacquire the facility at the completion of the project.

² A brief history of the West Valley project is set out in Senate Report No. 96-787, 96th Cong., 2d Sess. (1980).

³ West Valley Demonstration Project Act, *supra*, §2(c).

NFS objected to the amendment on the ground that it left NFS with residual responsibility under its portion of the license without any means of supervising DOE's activities during that agency's temporary administration of the facility. The Commission issued the amendment. NFS thereafter requested a hearing on it and sought to postpone its effectiveness pending the hearing. Dr. Irwin D. J. Bross, Director of Biostatistics at the Roswell Park Memorial Institute, the appellant here, also sought a hearing on Change 31 to consider what he characterized as the "misguided DOE efforts to clean up the 30,000,000 curies in Tank 8D2 [that] could endanger the health and safety of hundreds of thousands of Western New Yorkers. . . ."⁴ The Commission refused to stay the effectiveness of Change 31 but ordered that a Licensing Board be established to conduct a hearing on NFS' contentions regarding the amendment, and to rule on Dr. Bross' request. CLI-81-29, 14 NRC 940 (1981).

In an attempt to resolve its disagreement with the State, NFS brought suit in federal court to compel the State to accept possession of the facility. The State thereafter sued NFS in state court seeking to compel NFS to continue to maintain the low-level storage facilities that are unrelated to the DOE project. The state court action was removed to the federal court and consolidated with NFS' suit. At that point, the State modified its position and requested partial summary judgment to require NFS to vacate the high-level waste portion of the facility to DOE. On October 16, 1981, the court granted the State's motion for partial summary judgment and ordered NFS to vacate the high-level waste portion of the facility.⁵ The court specifically declined, however, to decide the issue of residual responsibility. The court of appeals reversed and ordered all matters set for trial.⁶

In the wake of the court decisions, NFS, with the support of the State, sought an additional amendment which would terminate NFS' responsibilities as a licensee. After finding that the amendment — so-called Change 32 — involved no significant hazards, the Commission issued the amendment terminating NFS' responsibilities under the license upon (i) the State's acceptance of NFS' surrender of the facility, (ii) DOE's assumption of exclusive possession, and (iii) the arrival of the final settlement date terminating the pending litigation, now scheduled for early 1983. DOE assumed exclusive possession of the facility on February 25, 1982.⁷

In view of the issuance of Change 32, NFS withdrew its earlier request for a hearing. Dr. Bross, however, filed with the Licensing Board a request for a hearing in connection with Change 32, reiterating in summary form his claim earlier raised

⁴ Letter of Irvin D. J. Bross to Sam Chilk (Oct. 16, 1981).

⁵ The State sought to evict NFS from the 158.8 acres on which the high level liquid wastes and reprocessing facilities are located; the State apparently wants NFS to retain possession of and responsibility for the low-level burial site that is unrelated to the DOE project.

⁶ *New York State Energy Research and Development Agency v. Nuclear Fuel Services, Inc.*, CIV-81-18E (W.D.N.Y. Oct. 16, 1981), *rev'd*, No. 81-7736 (2d Cir., Dec. 8, 1981).

⁷ DOE's assumption of control was made effective pursuant to Change 31. As noted above, Change 32, although issued, is not yet fully effective. Until then, NFS remains a licensee.

in connection with Change 31 that DOE's conduct of the project will cause hazards.⁸

On April 30, 1982, the Licensing Board approved NFS' motion to withdraw its earlier hearing request and denied Dr. Bross' two requests. LBP-82-36, 15 NRC 1075. With respect to the latter, it found that the two amendments were "related" within the meaning of 10 CFR 2.717(b) so that it could consider Dr. Bross' hearing request on Change 32 even though the Board had been explicitly empowered to review only the request for a hearing on Change 31. After an analysis of the language and legislative history of the West Valley Act, the Board concluded that the statute precludes any NRC hearings such as those sought by Dr. Bross with respect to DOE's conduct of the project. *Id.* at 1091-92.

Dr. Bross appeals the denial of his request for a hearing on Change 32.⁹ Although the arguments contained in his brief are far from clear, Dr. Bross accepts the denial of his hearing request on Change 31, *i.e.*, the Board's conclusion that the West Valley Act precludes the Commission's formal evidentiary examination of DOE's waste solidification activities. He argues, nonetheless, that the Commission may examine Change 32 in a formal hearing because that change does not directly involve DOE as a principal. Because Change 32 by its terms merely resolves various matters between the co-licensees NFS and the State, but does not affect DOE directly, Dr. Bross contends that this amendment may be used as the vehicle for holding a hearing on issues involving the public health and safety, including the fitness of DOE to have control of what he describes as "a very tricky clean-up operation (much worse than TMI-2)."¹⁰ Failure to grant the requested hearing, Dr. Bross believes, deprives him and others in western New York of financial and health protection without due process. The State, NFS and the NRC staff, as well as the *amicus curiae* DOE, support the Licensing Board's result. We affirm.¹¹

⁸ Dr. Bross' February 16, 1982 letter requesting a hearing states, in part: "Certainly the issues involving the public health and safety of the citizens of Western New York that I had previously raised before the Board apply with even more force to an amendment that would accelerate the onset of these documented hazards."

⁹ Our decision is narrowly limited to the issue presented on appeal, *i.e.*, whether Dr. Bross is entitled to a hearing with respect to Amendment 32. For example, we assume, without deciding, that Changes 31 and 32 are "related" within the meaning of 10 CFR 2.717(b) so that the Licensing Board had jurisdiction to consider Dr. Bross' hearing request on Change 32. Similarly, we express no view on the question of whether the West Valley Act subjects DOE to any of the licensing provisions of the Atomic Energy Act. See generally 10 CFR 50.11(b).

¹⁰ Appeal Brief of Dr. Bross (May 7, 1982) at 4.

¹¹ DOE filed a motion to submit a brief as an *amicus* in accordance with 10 CFR 2.715(d). We granted the motion but Dr. Bross asks us to reconsider. He argues that DOE's interest is sufficiently direct to require it to participate as a full party. We disagree. "*Amicus curiae*," strictly translated from the Latin, means "friend of the court," a definition intended to distinguish that kind of participant from the party advocate. Such a participant assists the tribunal in resolving matters of general public import or insures a complete presentation of difficult issues so that a proper decision is reached. *Alexander v. Hall*, 64 F.R.D. 152, 155 (D.S.C. 1974). We allow *amicus* participation where we believe it will assist our resolution of the issues and not prejudice the rights of the parties. See, *e.g.*, *Consumers Power*

(Continued)

II. ANALYSIS

We agree with the Licensing Board's conclusion that, in light of the West Valley Act which limits NRC review of DOE's plan to informal, consultative procedures, the Commission may not explore DOE's administration of the waste solidification project in a formal evidentiary hearing through review of Change 32 to which DOE is not a party. We cannot, in other words, use indirect means to undertake the type of evidentiary examination that Dr. Bross agrees we cannot undertake directly.

This conclusion does not result in any deprivation of Dr. Bross' due process rights. Congress has decided to substitute special procedures administered by DOE for the ordinary NRC hearing procedures in connection with the West Valley project.¹² DOE's brief indicates that Dr. Bross received a copy of its draft environmental impact statement, along with an announcement of the public hearing conducted by DOE and that, following the hearing, Dr. Bross submitted written comments that are currently under review by DOE. His substantive health and safety concerns will thus be evaluated. Dr. Bross may seek judicial relief if he believes that DOE has failed to fulfill its responsibilities under NEPA or the West Valley Act.

The Licensing Board's order denying Dr. Bross' two hearing requests is *affirmed*.

It is so ORDERED.

FOR THE APPEAL BOARD

Barbara A. Tompkins Secretary to the
Appeal Board

Company (Big Rock Point Nuclear Plant), ALAB-636, 13 NRC 312, note 2 (1981). As a practical matter, however, there is no bright line between the role of an amicus and that of a traditional party. Amici sometimes have some interest in the outcome of a case; often that interest borders on, or even overlaps, that of a party. See generally, *United States v. Barnett*, 376 U.S. 681, 737-739 (1964) (Goldberg, J., dissenting); and *New England Patriots Football Club, Inc. v. University of Colorado*, 592 F.2d 1196 (1st Cir. 1979). At times that interest may be such that the tribunal refuses to allow amicus participation. *Alexander v. Hall*, *supra*. This is not such a case. Although DOE is plainly not a wholly disinterested party, Dr. Bross has not been prejudiced by DOE's participation and our substantive resolution of Dr. Bross' appeal makes DOE's participation as a full party unnecessary. In such circumstances, DOE's participation as an amicus is proper. Upon reconsideration, we affirm our earlier ruling.

¹² The House Commerce Committee noted that the legislation specifically required the DOE Secretary to hold public hearings in the vicinity of the Center to inform the residents of the area of the activities proposed and to receive their comments on the project. The Committee explained that it expected that the Secretary "will afford interested members of the public every opportunity to participate in a meaningful manner at each stage of the process and that such public hearings will provide a useful forum for addressing public concerns." It also indicated its expectation that DOE would fully comply with all NEPA requirements. H.R. Rep. No. 96-1100, Part 2, 96th Cong., 2d Sess. 19-20 (1980).

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

**Stephen F. Ellperin, Chairman
Dr. W. Reed Johnson
Dr. Reginald L. Gotchy**

In the Matter of

**Docket Nos. 50-361-OL
50-362-OL**

**SOUTHERN CALIFORNIA EDISON
COMPANY *et al.*
(San Onofre Nuclear Generating
Station, Units 2 and 3)**

July 16, 1982

The Appeal Board denies intervenors' motion for a stay pending appeal of the Licensing Board's initial decision (LBP-82-39, 15 NRC 1163 (1982)) which authorized the issuance of a full power operating license for Units 2 and 3 of this facility.

RULES OF PRACTICE: STAY PENDING APPEAL

The determination whether an application for a stay of a licensing board decision should be granted is governed by the criteria in 10 CFR 2.788(e).

**OPERATING LICENSE: SUSPENSION (PENDING APPELLATE
REVIEW)**

In deciding whether to allow operation of a plant during appellate review of the pertinent licensing board decision, the standard to be applied is whether operation of the plant over the additional proceedings is consistent with the requirement that

there be reasonable assurance that the public health and safety not be endangered. *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 2), ALAB-486, 8 NRC 9, 46 (1978). That standard does not call upon a party to show that a serious nuclear accident is likely during the pendency of the appeal; it would be enough to show that apparent inadequacies were sufficient to raise the question whether plant operation would present an undue risk to the public in the event of a serious nuclear accident. *Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), ALAB-673, 15 NRC 688, 698 (1982).

EMERGENCY PLANS: CONTENT (DEFICIENCIES IN)

Under the Commission's emergency planning regulations, an applicant for a plant operating license has an opportunity to demonstrate to the satisfaction of the Commission that deficiencies in the emergency plans for the plant are not significant, that adequate interim compensating actions have been or will be taken promptly, or that there are other compelling reasons to permit plant operation. 10 CFR 50.47(c)(1).

APPEAL BOARD: STANDARD OF REVIEW

In reviewing a licensing board decision in the context of a motion for a stay pending its appeal, the normal deference that an appeal board owes to the trier of facts when reviewing a decision on the merits is even more compelling. See *Toledo Edison Co.* (Davis-Besse Nuclear Power Station, Units 1, 2 and 3), ALAB-385, 5 NRC 621, 629 (1977).

APPEAL BOARD: SCOPE OF REVIEW

An appeal board may disagree with a licensing board's interpretation on an issue even if no party presses an appeal on that issue. *Virginia Electric and Power Co.* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-491, 8 NRC 245, 247 (1978).

APPEAL BOARD: SCOPE OF REVIEW

Where a party has not pursued a contention before the Licensing Board in the form of proposed findings of fact, the Appeal Board will not entertain it "for the first time on appeal — absent a 'serious substantive issue.'" *Public Service Electric and Gas Co.* (Salem Nuclear Generating Station, Unit 1), ALAB-650, 14 NRC 43, 49 (1981).

**OPERATING LICENSE PROCEDURES: RESPONSIBILITY OF
NRC STAFF**

At the operating license stage, the NRC staff generally has the final word on all safety matters not placed into controversy by the parties. *South Carolina Electric and Gas Co.* (Virgil C. Summer Nuclear Station, Unit 1), ALAB-663, 14 NRC 1140, 1156 n.31 (1981).

**OPERATING LICENSE PROCEDURES: RESPONSIBILITY OF
NRC STAFF**

An operating license may not issue unless and until the agency makes the findings specified in 10 CFR 50.57 — including the ultimate finding that such issuance “will not be inimical to . . . the health and safety of the public.” As to those aspects of reactor operation not considered in an adjudicatory proceeding (if one is conducted), it is the staff’s duty to insure the existence of an adequate basis for each of the requisite Section 50.57 determinations. *South Carolina Electric and Gas Co.* (Virgil C. Summer Nuclear Station, Unit 1), ALAB-642, 13 NRC 881, 895-96 (1981), *affirmed sub nom. Fairfield United Action v. Nuclear Regulatory Commission*, No. 81-2042 (D.C. Cir., April 28, 1982).

RULES OF PRACTICE: IMMEDIATE EFFECTIVENESS REVIEW

Before a full power operating license issues for a plant, the Commission must complete its immediate effectiveness review of the pertinent licensing board decision pursuant to 10 CFR 2.764(f)(2).

APPEARANCES

Mr. Charles E. McClung, Jr., Laguna Hills, California, for the intervenors, *GUARD* and *Carstens, et al.*

Mr. Edward B. Rogin, San Francisco, California (with whom Messrs. **David R. Pigott**, **Samuel B. Casey**, **John A. Mendez**, **Charles R. Kocher**, and **James A. Beoletto** were on the brief) for the applicants *Southern California Edison Company, et al.*

Mr. Lawrence J. Chandler for the Nuclear Regulatory Commission staff.

DECISION

Intervenors Guard and Carstens, *et al.*, have asked us to stay the Licensing Board's May 14, 1982 initial decision which authorizes the issuance of a full power operating license for the San Onofre Nuclear Generating Station, Units 2 and 3. LBP-82-39, 15 NRC 1163. Their principal argument is that the deficiencies the Licensing Board found in San Onofre's emergency plan should preclude full power operation. More particularly, we are told that (1) the applicants' failure to provide a siren warning for some 30,000 people who live in the Dana Point and San Juan Capistrano areas, (2) the failure to make medical arrangements for the general public that might suffer radiation injury in a serious nuclear accident, and (3) the inadequate radiation monitoring capability of the localities near San Onofre should have resulted in the denial of a license until the deficiencies are corrected. A number of other arguments, mostly procedural in nature, are also urged in support of the stay motion. For the reasons given in this opinion, we deny the stay motion.

I. LEGAL PRINCIPLES

In determining whether a stay should be granted we apply 10 CFR 2.788(e), which calls upon us to consider:

- (1) Whether the moving party has made a strong showing that it is likely to prevail on the merits;
- (2) Whether the party will be irreparably injured unless a stay is granted;
- (3) Whether the granting of a stay would harm other parties; and
- (4) Where the public interest lies.

The first of those determinations — the merits of the emergency planning issues — has a decided influence on the issues of irreparable injury and the public interest: for in deciding whether to allow operation of a plant during our appellate review we look to whether "operation of the plant over the period required to complete the additional proceedings [is] consistent with the requirement that there be reasonable assurance that the public health and safety not be endangered." *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 2), ALAB-486, 8 NRC 9, 46 (1978). That standard, we have said, does not call upon intervenors to show that a serious nuclear accident is likely during the pendency of the appeal. *Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), ALAB-673, 15 NRC 688, 698. To paraphrase our earlier *San Onofre* opinion, it would be enough if apparent inadequacies in emergency planning "were sufficient to raise the question whether plant operation would present an undue risk to the public in the event of [a serious nuclear accident]." *Id.* at 698 (footnote omitted).

In considering the merits, however, we do not take the text of the emergency planning requirements in isolation. Recognizing that those requirements are new, and that they necessitate extensive coordination among licensees and local and state governments (and thus are not wholly within the power of its licensees to satisfy),¹ the Commission has provided that, even if there are deficiencies,

the applicant will have an opportunity to demonstrate to the satisfaction of the Commission that deficiencies in the plans are not significant for the plant in question, that adequate interim compensating actions have been or will be taken promptly, or that there are other compelling reasons to permit plant operation.

10 CFR 50.47(c)(1).² Thus, when determining the merits of an emergency planning issue, the Commission's regulations call upon us not only to look to the requirements that have been imposed, but also to exercise judgment as to the significance of whatever deficiencies there may be and the adequacy of interim measures to rectify them.

II. THE MERITS

We now turn to a consideration of the merits of intervenors' arguments for a stay of the full power license authorization for San Onofre.

A. Siren Coverage

1. Background

Basic to emergency planning is the requirement for a notification system so that protective action can be taken by the public. The Commission's regulations require that, within 15 minutes of declaring an emergency, a licensee must have the means to notify government officials of the seriousness and nature of the accident. In turn, should those officials decide that protective measures such as sheltering or evacuation are required, in about another 15 minutes they must be able to alert the general public who reside in the plume emergency planning zone (EPZ). The plume EPZ is an area within approximately 10 miles of the plant, the precise bounds of which are

¹ See generally 45 *Fed. Reg.* 55403-04, 55406-07 (August 19, 1980).

² Another part of the emergency planning regulations, 10 CFR 50.54(s)(2)(ii), provides as well a four-month grace period for already-operating plants to correct emergency planning deficiencies. If deficiencies remain after that time the Commission then determines what enforcement action to take, guided by the same considerations we have already quoted.

to be determined by local conditions and needs. 10 CFR Part 50, Appendix E, Section IV.D.3; 10 CFR 50.47(b)(5), (c)(2).³

The means of prompt notification proposed by the applicants was a network of 41 sirens to cover the plume EPZ. The precise configuration for that zone was a contested issue in the proceeding. The Licensing Board concluded that the applicants' 10-mile zone was too constricted because it did not afford siren coverage to the 30,000 people who reside across San Juan Creek in the community of Dana Point and the northern half of the town of San Juan Capistrano. In all other respects these areas were fully included in the emergency plan. Tr. 7371-72, 8910-11; LBP-82-39, 15 NRC at 1183. Accordingly, the Board extended the EPZ two to three miles to encompass those areas. In its view, this extension (1) falls well within the dictates of 10 CFR 50.47(c)(2) that the plume EPZ be "about 10 miles," (2) is supported by the requirement in that regulation to pay heed to local characteristics such as jurisdictional boundaries, (3) will eliminate the confusion that could be caused by applicants' bifurcated EPZ, and (4) has the benefit of giving full coverage to a populated area at little additional cost. *Id.* at 1183-84.

The Licensing Board ruled further, however, that the current absence of siren coverage for the populated areas across San Juan Creek was not grounds for denying the applicants a license for full power operation. The Board's conclusion was based on its finding that alternative means (such as loudspeakers from helicopters and police cars) exist to provide a prompt alert to this public in the event of an emergency. *Id.* at 1205, 1266-67. Hence, in the words of 50.47(c)(1), there was reasonable assurance that "adequate interim compensating actions have been or will be taken." The Board imposed a license condition, which it clarified in a subsequent order (LBP-82-40, 15 NRC 1293 (1982)), that requires the applicants to remedy the siren warning deficiency within six months of the commencement of full power operation.

Intervenors do not quarrel with the Board's reliance on the alternatives to sirens in deciding whether the warning system can function adequately until full siren coverage is in place. They do contest, however, the Board's factual conclusion that helicopter and police car loudspeakers will be adequate for the job. Intervenors argue that the record is devoid of factual support for the conclusion that helicopters and emergency vehicles can be diverted to notify 30,000 people within an adequate period of time. App. Tr. 22-23.

³ After specifying that the plume EPZ shall consist of an area "about 10 miles (16 km) in radius," 10 CFR 50.47(c)(2) further provides that:

The exact size and configuration of the EPZs surrounding a particular nuclear power reactor shall be determined in relation to local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries.

2. Analysis

On factual issues that arise in the context of a stay motion we are very hesitant to substitute our judgment for that of the Licensing Board. The Board has, after all, presided over the entire proceeding. Our familiarity with the facts in the limited time we have had for review is perforce much less. The normal deference that an appellate body owes to the trier of the facts when reviewing a decision on the merits is thus even more compelling at this preliminary stage of review. See *Toledo Edison Co.* (Davis-Besse Nuclear Power Station, Units 1, 2 and 3), ALAB-385, 5 NRC 621, 629 (1977).

Here, while the record on the issue is sparse, there is enough to support the Licensing Board's conclusion as to the adequacy of interim alerting measures. The 30,000 people who live across San Juan Creek in the Dana Point and San Juan Capistrano areas are clustered in a densely populated area of a relatively few square miles. See Applicants' Exhibit 132, fig. 10 and Appendix A-2. To alert these people, Orange County could call upon some of its 2,000 emergency vehicles, practically all of which have either loudspeakers or sirens. Tr. 8763, 8916. The marine base at nearby Camp Pendleton has helicopters equipped with loudspeakers that could also be pressed into emergency service. Tr. 9342-43, 9373. California Highway patrol cars equipped with loudspeakers may also be of assistance. Tr. 8268-72.

While the record does not indicate how many emergency vehicles or helicopters can be deployed to cover the Dana Point and San Juan Capistrano areas on short notice, it was the opinion of Mr. Egbert S. Turner, Manager of the Emergency Management Division, Orange County General Services Agency, that with existing siren coverage and county resources he could get notice out to all people within his jurisdiction (including those in Dana Point and San Juan Capistrano) within 30 minutes. Tr. 9003-05, 9021-22.⁴ Moreover, siren coverage would not be wholly absent because two of the 41 sirens already in place are outside the 10-mile radius near those populated areas, and would provide an adequate level of alerting sound to at least some limited part of that region. See Applicants' Exhibit 135; Tr. 6931, 7372.

Mr. Turner's 30-minute alert estimate suffices to support the Board's conclusion that adequate compensating measures to address the siren deficiency will be undertaken. The emergency planning regulations provide as a "design objective" that local officials must be able to alert essentially all of the public initially

⁴ This is the only time estimate we have been able to discover in the record on this point. See also Applicants' Exhibit 53 at V-6, which indicates that Orange County believed it could notify all people in the plume EPZ within one hour, even before the applicants' siren warning system was installed. We note also that the Orange County emergency procedures still include the idea that mobile units would be used in areas to be evacuated even when there is siren coverage. Tr. 9021-22.

“within about 15 minutes” from the time the officials themselves are notified of the emergency by the licensee. 10 CFR Part 50, Appendix E, Section IV.D.3. The guidance that implements the Commission’s regulations reiterates the objective of an alert signal on an area-wide basis throughout the 10-mile EPZ within 15 minutes.⁵ It goes on to provide that the objective of the initial notification shall be to assure coverage of essentially 100 percent of the population within five miles of the site. As to those who are more distant, or those who did not receive the initial notification, the guidance provides that “[s]pecial arrangements will be made to assure 100% coverage within 45 minutes of the population who may not have received the initial notification within the entire plume exposure EPZ.”⁶

As we read that implementing guidance, it calls for those nearest the nuclear power plant to be assured of the most prompt warning, while those farther away — in the remaining portion of the plume EPZ — are to be notified in all circumstances within 45 minutes. The allowance of additional time to notify people farther from the nuclear power plant site is in recognition of not only the potentially more difficult notification problem but, more importantly, the lesser risk to those farther away. Thus, the report that provided much of the technical basis for the Commission’s choice of a 10-mile plume EPZ⁷ explained that

although protective actions may be required for individuals located in areas further than 10 miles from the reactor for an “atmospheric” release, the actual measures used and how rapidly or efficiently they are implemented, will not strongly influence the number of projected early health effects.⁸

So too, in discussing the time factors associated with releases, the guidance document implementing the Commission’s regulations stated:

The range of times between the onset of accident conditions and the start of a major release is of the order of one-half hour to several hours. The subsequent time period over which radioactive material may be expected to be released is of the order of one-half hour (short-term release) to a few days (continuous release).

⁵ NUREG-0654, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, Rev. 1 (November 1980), Appendix 3 at 3-3. This document was jointly prepared by the NRC staff and the staff of the Federal Emergency Management Agency.

⁶ *Ibid.*

⁷ See 44 *Fed. Reg.* 61123 (October 23, 1979); 45 *Fed. Reg.* 55406 (August 19, 1980).

⁸ NUREG-0396, Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants (December 1978), at I-52. The report explained further (*id.* at I-50):

In the intervals beyond 10 miles, there is little apparent distinction between the effectiveness of evacuation and sheltering strategies in terms of projected early fatalities or injuries. The mean number of early fatalities is 0 in both of these intervals, and projected early injuries, although not 0, are greatly reduced for each of the protection strategies investigated.

NUREG-0654, note 5 *supra*, at 13. The time for a radioactive release to travel to a point 10 miles from the plant is typically another one to four hours. *Id.* at 17.⁹

In short, time is not of the essence for people living more than 10 miles from the site of a potential accident at San Onofre. The technical analysis underlying the Commission's regulations recognizes this, and the implementing guidance of NUREG-0654, which requires less immediate notification to those persons farther away from the accident (45 minutes for essentially 100 percent notification), is to the same effect. See generally NUREG-0396, note 8 *supra*, at I-44 through I-52. While it is prudent to provide as much alerting time as possible, we conclude that the 30 minutes Mr. Turner thought it would take to notify the people in his area provides an adequate interim compensating measure to an area-wide siren alert. Intervenors have not made a strong showing that they are likely to prevail on the merits of their argument to the contrary.

B. Medical Assistance for the Radiation-Injured in the General Public

1. Background

The Licensing Board ruled that 10 CFR 50.47 requires the emergency response plans of the applicant and the surrounding area jurisdictions to provide for medical arrangements for members of the general public who might suffer radiation injury in a serious nuclear accident. LBP-82-39, 15 NRC at 1199.¹⁰ The Board also concluded that the absence of such medical arrangements for a period of six months should not preclude full power operation. The Board based this latter

⁹ If the travel time were shorter, the expected doses would be correspondingly lower. As observed in NUREG-0396, note 8 *supra*, at 18:

[U]nder poor dispersion conditions associated with low windspeeds, two hours or more might be required for the plume to travel a distance of five miles. Higher windspeeds would result in shorter travel times but would provide more dispersion, making high exposures at long distances much less likely.

¹⁰ The applicants and staff disputed the Board's interpretation. When the meaning of the regulation was debated before the Licensing Board the applicants took the position that the requirement in 10 CFR 50.47(b)(12) to make medical arrangements for "contaminated injured individuals" referred to contaminated persons who had been *traumatically* injured. Tr. 9637-40.

The staff's position has been less than clear. Before the Licensing Board the staff argued that the term contaminated injured was "broad enough to include an injury with a contaminated wound or just an excessive radiation dose without a wound." Tr. 9650. Nevertheless, despite this position that "injury" could mean either traumatic injury or radiation injury, the staff went on to argue that the regulations require no specific medical arrangements for the general public who might be injured in the most serious and improbable of nuclear accidents. Tr. 9651-52. On appeal, the staff termed its disagreement with the Licensing Board a disagreement over whether "planning" or "pre-planning" was required, the Board calling for the former and the staff arguing only for the latter. App. Tr. 69-70. This distinction, we are told, is the difference between requiring specific medical arrangements and merely identifying general medical resources. App. Tr. 69-72.

While neither the applicants nor the staff has appealed the Board's ruling, we nevertheless are free to disagree with the Board's interpretation even if no party presses an appeal on the issue. *Virginia Electric and Power Co.* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-491, 8 NRC 245, 247 (1978).

conclusion on several factors: (1) the remote possibility of a nuclear accident in the six months the Board allowed for the applicants and local officials to plan for medical arrangements; (2) the capability of the applicants' emergency medical plan for its own employees to care for some persons injured offsite as well; (3) the extant ability to provide medical services for the general public on an ad hoc basis; and (4) the good faith efforts of the applicants and local officials to meet a "sometimes less than completely clear" emergency planning requirement. *Id.* at 1199-1200, 1290.

Intervenors challenge the Board's decision to allow full power operation in the face of this emergency planning deficiency. Their challenge is said to be more than a factual dispute about whether alternative measures will compensate for the deficiency in medical arrangements. Here, intervenors argue, the Licensing Board has provided the applicants a six-month grace period without making any finding that interim compensating actions will be taken. Moreover, in their view, the Board afforded the grace period only because of the unlikelihood of an accident, a factor intervenors contend the emergency planning regulations do not allow the Board to consider. App. Tr. 9-11. See 10 CFR 50.47(c)(1).

2. Analysis

Despite the Licensing Board's detailed examination of the history of the medical services regulation, we entertain serious doubts that the Board's reading is accurate. The text of 50.47(b)(12) is as follows (emphasis added):

(b) The onsite and offsite emergency response plans for nuclear power reactors must meet the following standards: * * * (12) Arrangements are made for medical services for *contaminated injured* individuals.

On its face, the regulation requires arrangements for medical services only for "contaminated injured" individuals, not for members of the general public who may have suffered radiation exposure or injury in a nuclear accident. The distinction between the two classes of people is not inadvertent.¹¹ It is based upon a

¹¹ For present purposes, the primary distinction is between those persons who have been contaminated and traumatically injured (*i.e.*, persons who have radionuclides on or in their bodies and also are physically injured) as opposed to persons who have been exposed to radiation. In actuality, there could be additional categories, based on the factors of (1) radiation exposure, (2) traumatic injury, and (3) contamination.

For persons who suffer radiation injury (*i.e.*, approximately a 200 rem radiation dose) and are contaminated, generally 90 percent of their surface contamination can be removed simply through bathing or showering. This reduces the contamination to levels that are medically quite small so that whatever residual contamination may remain does not interfere with the treatment for radiation injury. Tr. 7743-45.

Persons who are contaminated but have not received substantial radiation doses would not need any hospital treatment. Decontamination would be a matter of washing with soap and water. Tr. 7720. See also Tr. 7087-88, 10,822, 10,850-51.

judgment as to their anticipated needs for emergency treatment. And it is an emergency planning regulation we are construing.

“Contaminated injured” is a distinct category encompassing potential patients whose traumatic (*i.e.*, physical) injuries are complicated by radioactive contamination. As Dr. Roger E. Linnemann explained:

A patient who has been exposed to radiation does not, in turn, give off radiation any more than a burn[ed] patient gives off heat. There has been damage and . . . the clinical course unfolds over a period of time.

This means that we do have time to react and time to plan.

. * * *

[T]he problem arises if the person is injured and contaminated. This requires special facilities at a hospital. It requires special facilities because we would rather not admit those persons to our normal emergency room because contamination is loose. It can fall on the floor . . . in the emergency rooms, where people move in and out quite quickly, and the first thing you know you could cause contamination in the hallways of the hospital. . . . [T]herefore we have designed facilities where a patient can be treated for his traumatic injury while you control the contamination.

Tr. 7719-21. See also Tr. 7082-84, 7727-29, 7745-48. Dr. Linnemann further explained that because the clinical course of radiation injury unfolds over time and “is seldom, if ever, life threatening[,] . . . in all cases [treatment of] the traumatic injury takes precedence.” Tr. 7721. In short, the contaminated injured need emergency care for their traumatic injuries. Plans must be in place to provide that care without contaminating the persons or facilities providing it. People who suffer radiation injury, on the other hand, are unlikely to need emergency treatment.

The record is clear that relatively few people are expected to be both contaminated and traumatically injured in a nuclear accident. The estimate was from one to perhaps 25 or so. Tr. 11,060-61. See also Tr. 7747. These people would be principally workers onsite who become contaminated and injured during the course of the accident. The contaminated injured could also include members of the general public, such as emergency workers, who might be involved in monitoring a contaminated area onsite and are then injured (for example) in a traffic accident. Tr. 11,059-61. See also Tr. 7746-48. The applicants’ present emergency plan is fully adequate to cope with these eventualities. The applicants have specific arrangements with three hospitals to provide medical services to contaminated injured individuals, and Orange County’s emergency response plan identifies 13 area hospitals that have the capability of handling patients with radioactive contamination. Applicants’ Exhibit 53 at IV-2, V-39; Tr. 7107-09, 11,059-61. See also Testimony of John R. Sears, fol. Tr. 10,644, at 7-8. See generally Applicants’ Exhibits 85-99. These existing plans can be built upon and expanded on an ad hoc basis should the need arise. Tr. 10,830-33.

Both Dr. Linnemann for the applicants and Dr. Mary Reed for the intervenors agreed it was not likely that large numbers of the general public would receive such high doses of radiation in a nuclear accident as to warrant hospitalization or emergency treatment. Tr. 7087, 7727, 10,276-78.¹² Hospitalization would be recommended for persons who had received an exposure of 150 to 200 rem or upwards over the course of a few hours. Tr. 7728, 7767. Under the emergency response plans, it is envisioned that protective action (for example, sheltering or evacuation) would be initiated when projected doses to the general public are in the range of one rem. Tr. 7210-11. See NUREG-0654, note 5, *supra*, at 60-61, Criteria J.7, J.9. Thus, for a serious nuclear accident to result in the hospitalization of large numbers of people, not only must an already unlikely accident be severe,¹³ but also the emergency response to protect the public must be ineffectual. Even then, intervenors' witness Dr. Rex Ehling agreed with Drs. Reed and Linnemann that hospitalization would not be an emergency matter. Tr. 7087, 7109, 7718-19, 9979, 10,277-78. Moreover, Dr. Ehling testified that there are several thousand hospital beds immediately available in Orange County that could care for people who require hospitalization for radiation injury. Tr. 9979-80, 9991-92.¹⁴

The foregoing discussion indicates that intervenors have failed to make a strong showing that they are likely to prevail on their claim that San Onofre should not operate at full power until plans are in place for medical arrangements for those members of the general public who may suffer radiation exposure in a serious nuclear accident. As we have explained (see pp. 136-137, *supra*), there is serious doubt that the Commission's regulations require arrangements of that kind. Assuming that such arrangements are required, however, the standard of 10 CFR 50.47(c)(1) allowing for plant operation in the face of emergency planning deficiencies has nonetheless been met. This is so for two reasons. First, given the expert medical testimony that immediate hospitalization would not be necessary

¹² Dr. Linnemann foresees the possibility that in a serious nuclear accident there would be large numbers of people slightly exposed to radiation and exceedingly anxious. He thinks that they would require monitoring attention at reception centers and information by persons knowledgeable about the effects of radiation, as are currently provided for by local emergency plans. See generally Applicants' Exhibit 53 at IV-11-12, V-39-42 through 43-44. Dr. Linnemann believes, however, that hospitalization would be undesirable for such persons. Tr. 7087.

¹³ The Licensing Board's initial decision reproduces Table 7.4 from NUREG-0490, Final Environmental Statement (April 1981). LBP-82-39, 15 NRC at 1198. It shows, for example, that the probability of an accident at San Onofre that would deliver doses of over 200 rem to 2,000 people is one in one million in any one year of reactor operation. The staff thinks this calculation is conservative — perhaps unrealistically so — because (1) it assumes that the general public will be evacuated in the direction of the radioactive plume; (2) the probability of the most severe accident is now thought to be lower than calculated in the FES; (3) it assumes that people who would not be evacuated would simply go about their usual business; and (4) no timely protective action was assumed for people beyond the EPZ during a severe accident that might threaten them. Tr. 10,330, 10,335-36, 10,339-41. The staff concluded that Table 7.4 "should not be used for emergency planning purposes due to the degree of conservatism in the assumptions used in the calculations on which the table is based." Tr. 10,341.

¹⁴ Dr. Linnemann noted that it is not at all unusual for hospitals to be capable of treating patients with radiation injury. Tr. 7728-29.

for radiation injury, the asserted planning deficiency is “not significant.” Second, in view of the immediate availability of hospital beds and trained people to care for those who have received substantial radiation doses, there is reason to conclude that “adequate interim compensating actions have been or will be taken promptly.”¹⁵

C. Ability of Offsite Jurisdictions to Monitor and Assess Radiological Emergencies

I. Background

The governing regulation, 10 CFR 50.47(b)(9), requires the applicants and local jurisdictions to have “[a]dequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency. . . .”¹⁶ The Licensing Board explained the importance of this requirement in its decision (15 NRC at 1201):

Should there be an actual or potential radiological release from San Onofre, the nature and magnitude of the release and the prevailing meteorological conditions must be established and kept current so that potential offsite doses can be projected. Such projections give decision-makers in the offsite response organizations the information they need to make correct decisions concerning the appropriate protective action — sheltering or evacuation. Field monitoring confirms the accuracy of offsite dose projections made on the basis of onsite data.

The Board noted that all parties had acknowledged there were deficiencies in the radiation assessment capabilities of the local jurisdictions. *Id.* at 1201. Accordingly, the Board focused its attention primarily on whether the applicants’ capabilities could meet all needs for radiation monitoring and assessment in the plume EPZ. After reviewing those capabilities, the Board found that “the [a]pplicants, at least with the emergency support from other utilities, can carry out all of the necessary

¹⁵ In view of our disposition of this point, we need not decide whether the Licensing Board erred in considering as one of the bases for allowing full power operation that the probability of any nuclear accident during the first six months of operation was remote.

¹⁶ This requirement is generally broken down to cover two distinct types of radiological hazard — that associated with exposure to the radioactive plume and that associated with the ingestion pathway. Plume exposure occurs when persons are (1) directly exposed to radiation emitted by the plume, (2) exposed to materials they may have inhaled from the plume, or (3) exposed to radiation from material deposited on the ground from the plume. Radiation exposure from the ingestion pathway occurs when persons eat or drink material that has become contaminated by the depositing of radioactive material from the plume onto the ground or into the water supply. The most important ingestion pathway is typically the grass-cow-milk-human chain. See generally NUREG-0654, note 5 *supra*, at 14-17; Applicants’ Exhibit 53 at II-2-3.

Intervenors’ argument is directed mainly to the plume EPZ monitoring and assessment requirement. See pp. 140, 142-143, *infra*.

radiological assessment and monitoring, both onsite and in the plume EPZ." *Id.* at 1202. In addition, the Board found that the offsite organizations possessed significant capabilities in this regard and would assist the applicants in an emergency.

Ibid. The Licensing Board's ultimate finding was that

deficiencies in the offsite response organizations in meeting applicable standards for assessment and monitoring in the plume exposure pathway are not significant for San Onofre within the meaning of 10 CFR 50.47(c)(1). This means that such deficiencies are not an impediment to licensing.

Id. at 1202. See also *id.* at 1263-64.¹⁷ Intervenors challenge the factual basis for the Board's conclusion and contend that, as a matter of law, redundant monitoring and assessment capability must exist in offsite jurisdictions in order to provide a reasonable basis for protective action response.¹⁸

2. Analysis

The NUREG-0654 guidance that implements the Commission's emergency planning requirements provides, among other things, that in an accident situation a licensee must have the capability to measure the radiation levels in the plant. It must also have an onsite Technical Support Center (TSC) and an offsite Emergency Operations Facility (EOF) capable of taking radiological and meteorological data and making an assessment of actual and potential offsite radiation exposure. See NUREG-0654, note 5 *supra*, at 56-57, Criteria I.1-I.6. The offsite organizations (*i.e.*, the local governments) are to be able to put equipped, trained monitoring teams into the field to make dose measurements, including the measurement of radioiodine in the air. *Id.* at 57-58, Criteria I.7-I.11. These localities should then be able to decide upon and implement protective actions, such as sheltering or evacuation, based upon and consistent with the radiological hazards information that has been provided. *Id.* at 61-64, Criteria J.9-J.10.

a. It is plain from the record that the applicants have the ability to assess potential offsite radiological consequences and to provide local officials with the information necessary for their decisions. Two independent facilities are at the applicants' disposal for this purpose. The most important dose assessment capability is that provided by the applicants' Technical Support Center adjacent to the plant control room. This facility has immediate access to in-plant radiation and

¹⁷ These facts also led the Board to conclude that adequate interim compensating action to monitor and assess radiological releases would be taken within the meaning of 10 CFR 50.47(c)(1). 15 NRC at 1288-89 and n.66. The Board also imposed license conditions requiring the applicants to maintain their monitoring and assessment capabilities at no less a level of readiness than was described at the hearing, and to have installed and operating within six months after full power operation a second meteorological tower and a health physics computer to perform offsite dose calculations in the event of an accident.

¹⁸ Application for Stay of Full Power License (June 1, 1982) at 3-4.

effluent monitoring information, as well as to meteorological information and data regarding the status of other crucial plant parameters that may govern the future course of an accident. See NUREG-0712, Safety Evaluation Report (February 1981), at 13-8; Tr. 7165-67. The TSC is in direct communication with each of the surrounding jurisdictions through their emergency operations centers and can provide them directly with dose assessment information. Tr. 7377. The TSC also receives offsite dose monitoring results from field teams sent out by the applicants and by the offsite organizations. Tr. 7170-75.

In addition, the applicants have an offsite dose assessment center (ODAC) in the Emergency Operations Facility.¹⁹ In the event of an accident the ODAC will be manned by the applicants' trained technical personnel, a health physicist from Orange County, and representatives from other local organizations and the State. Tr. 7379-80. This facility is in direct communication with the TSC and would receive the results of offsite radiation monitoring activity. Consequently, the present facilities provide independent capabilities for radiological consequences assessment in which the offsite jurisdictions would participate directly in a technical role.

The ODAC is also capable of being used to provide local officials who are stationed at the various emergency operations centers with information upon which their protective action decisions can be based. While the ODAC does not have direct access to plant monitoring information, these data are accessible through the communications link with the TSC. See Tr. 7379-80. The Licensing Board's requirement that the applicants are to install a dedicated computer for the calculation of offsite dose information will strengthen this system further. Tr. 7176, 7607-08. See note 17, *supra*.

b. In terms of monitoring capability, each of the surrounding jurisdictions has the ability (as do the applicants) to send equipped and trained dose monitoring teams to the field. These jurisdictions include Orange County, the City of San Clemente, San Diego County, and Camp Pendleton. Tr. 8606-08, 8919, 9320-21, 9338. There has been significant improvement in this regard since the May 1981 emergency planning exercise, when the Federal Emergency Management Agency (FEMA) criticized the local jurisdictions' monitoring capabilities. LBP-82-39, 15 NRC at 1251-52 and materials there cited.²⁰

¹⁹ At present the EOF and ODAC are located in a fire station in San Clemente several miles from the plant. A new EOF is under construction on company land considerably closer to the plant. Completion is projected for October 1982.

²⁰ Another training exercise involving these jurisdictions was carried out on April 15, 1982 and evaluated by FEMA. Although FEMA's evaluation material is outside the record of these proceedings, no party objects to our looking at the evaluation for the specific purpose of confirming that the monitoring capabilities have not deteriorated since the time of the evidentiary hearing. See App. Tr. 82. They have not deteriorated. We note this summary statement found on page ii of the evaluation: "Overall, our observations concluded that all jurisdictions reflected an adequate or better capability to respond to an offsite emergency at San Onofre N.G.S."

In sum, the applicants have two facilities, each capable of providing local officials with timely dose assessments from information generated at the nuclear power plant and obtained by offsite monitoring teams.²¹ Moreover, each of the offsite jurisdictions has substantial dose monitoring capability that can supplement that of the applicants. We conclude, therefore, that there exists redundant capability to gather and assess radiological consequences information and to provide that information in a timely manner to those officials who must use it to make protective action decisions.

As to intervenors' other argument (offered without support), we are unpersuaded that, as a matter of law, deficiencies in the monitoring and assessment capabilities of offsite jurisdictions cannot be compensated for by the applicants' system. On its face, 10 CFR 50.47(c)(1) allows compensating measures to be undertaken for any emergency planning deficiency. There is no reason why one trained, equipped, and capable offsite radiation monitoring team can not be substituted for another, whether it is that of the applicants or that manned by local government personnel. Moreover, to the extent the requirement for local monitoring and assessment capability evinces a policy judgment that those who bear the responsibility for sheltering or evacuation decisions should be closely involved in the monitoring and assessment process, the record demonstrates that such is already the case. See p. 141, *supra*. Intervenors have not made a strong showing that the Licensing Board's decision on the adequacy of radiological assessment and monitoring capability is erroneous.

D. Other Issues

Intervenors also seek a stay of full power operation based upon the Board's refusal to find that emergency plans for radiological monitoring and assessment in the ingestion emergency planning zone are adequate. The Board termed the record on this matter "decidedly equivocal" and (because of intervenors' failure to propose findings of fact) ruled that the issue was uncontested, to be resolved informally by the staff prior to full power operation. 15 NRC at 1209-11. The Board's hesitancy on the question of adequacy stemmed from the fact that the lead role in emergency planning and implementation for the ingestion EPZ is given to the State. While the applicants had "done about all that might reasonably be

²¹ We do not mean to suggest that both the Technical Support Center and the Emergency Operations Facility should provide this information to the emergency operations centers. The ODAC in the EOF is to be the primary source of information, once it is functioning. Tr. 7379-80, 8948-49.

expected of them in this area," the Board found that the State plan was still evolving. *Id.* at 1209, 1210.²²

Intervenors have not made a strong showing that the Board's disposition of this issue was erroneous. Where a party has not pursued a contention before the Licensing Board through proposed findings of fact, we will not entertain it "for the first time on appeal — absent a 'serious substantive issue.'" *Public Service Electric and Gas Co.* (Salem Nuclear Generating Station, Unit 1), ALAB-650, 14 NRC 43, 49 (1981). Here, a serious substantive issue is not presented by the Licensing Board's determination to leave the monitoring adequacy question for resolution by the staff. As we have previously remarked: "at the operating license stage, the staff generally has the final word on all safety matters not placed into controversy by the parties." *South Carolina Electric and Gas Co.* (Virgil C. Summer Nuclear Station, Unit 1), ALAB-663, 14 NRC 1140, 1156 n.31 (1981). This does not work an unfairness or compromise safety. The NRC staff has a continuing responsibility to assure that all regulatory requirements are met by an applicant and continue to be met throughout the operating life of a nuclear power plant.²³ We thus see no basis for a stay based upon the Board's relegation of an uncontested issue to the staff for resolution.

Lastly, intervenors argue that the Licensing Board applied an erroneous standard in judging the adequacy of applicants' emergency plan, violated intervenors' due process rights by not allowing discovery directed to the Federal Emergency Management Agency, and erroneously countenanced *ex parte* communications among the NRC staff, applicants, and FEMA.

These arguments can be disposed of quickly. As to the first, intervenors claim that the Licensing Board adopted "a standard that what there is, is adequate."²⁴ The

²² Applicants submitted an extensive study of potential radiological hazards in the ingestion pathway EPZ in the event of a serious accident, a study that included suggested protective response levels for food, milk, and water. Applicants' Exhibit 121. They also presented an emergency response plan for the ingestion pathway. Applicants' Exhibit 143. The latter document was reviewed by the State Health Department and was found to be "excellent, generally well organized, concise and consistent with the RHS (Radiological Health Services) planning procedures document." Applicants' Exhibit 159. See also Tr. 7388-89. Mr. David F. Pilmer, for the applicant, testified that the State had prepared a draft emergency plan for the ingestion pathway, which assigns responsibilities to the local jurisdictions and designates the State's supporting role. Tr. 11,115. He also indicated that the applicants' plan would guide the ODAC personnel in selecting appropriate pathway samples and evaluating them. Tr. 11,123. The Orange County Emergency plan includes provisions for taking samples of water and foodstuffs, and the County has an agreement with the University of California at Irvine to analyze such samples. Tr. 8982-83.

²³ As we said in *South Carolina Electric and Gas Co.* (Virgil C. Summer Nuclear Station, Unit 1), ALAB-642, 13 NRC 881, 895-96 (1981), *affirmed sub nom. Fairfield United Action v. Nuclear Regulatory Commission*, No. 81-2042 (D.C. Cir., April 28, 1982):

[A]n operating license may not issue unless and until this agency makes the findings specified in 10 CFR 50.57 — including the ultimate finding that such issuance "will not be inimical to * * * the health and safety of the public". As to those aspects of reactor operation not considered in an adjudicatory proceeding (if one is conducted), it is the staff's duty to insure the existence of an adequate basis for each of the requisite Section 50.57 determinations [footnote omitted].

²⁴ Application for Stay of Full Power License (June 1, 1982) at 5.

argument is offered without elaboration, and we can see no support for it. The Licensing Board's 220-page opinion provides the detailed factual basis and regulatory support for the Board's conclusion that the applicants' emergency plan passes muster. To the extent intervenors mean to argue that the adequacy of the emergency plan must be tested by a cost/benefit analysis, again we are offered no supporting elaboration for such a requirement. In any event, we are of the view, at least preliminarily, that the emergency planning rule itself already accounts for whatever cost/benefit analysis might be necessary. As the applicants rightly remark, "[t]he emergency planning zone concept [in the Commission's rules already] takes into account the broad range of radiological accidents and dose consequences to the public from such accidents."²⁵ It need not be reanalyzed in each individual proceeding.

The claimed violation of due process rights and *ex parte* irregularities also fall far short of a strong showing on the merits. While intervenors now urge that they were denied discovery against FEMA, the record reveals that intervenors never sought to depose any FEMA witnesses. Tr. 643-49. So too, nothing in the Commission's *ex parte* rule (10 CFR 2.780) precludes conversations among parties, none of whom is a decisionmaker in the licensing proceeding. We doubt intervenors will persuade us in the pending appeal that it was improper for FEMA, the applicants, and the staff to confer about defects in the applicants' emergency plan and to suggest ways to correct them.

In sum, intervenors have not made a strong showing that they are likely to prevail on the merits of either the substantive or procedural issues they have raised. To the extent the Licensing Board identified deficiencies in applicants' emergency planning for San Onofre, those deficiencies are being compensated for by other measures now in place. We therefore conclude that intervenors are not threatened with irreparable injury by the prospect of a full power operating license being issued for San Onofre and that the public interest favors denial of their stay application.²⁶

²⁵ Applicants' Response in Opposition to Application of Intervenors Guard *et al.* for a Stay of Full Power License (June 16, 1982) at 7.

²⁶ We also note that before a full power license issues, the Commission must complete its immediate effectiveness review pursuant to 10 CFR 2.764(f)(2), and the staff must resolve certain open issues. See p. 143, *supra*.

For all the foregoing reasons, intervenors' motion for a stay pending appeal is *denied*.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Thomas S. Moore, Chairman
Dr. John H. Buck
Dr. W. Reed Johnson

In the Matter of

Docket Nos. 50-275-OL
50-323-OL

PACIFIC GAS AND ELECTRIC COMPANY
(Diablo Canyon Nuclear Power Plant,
Units 1 and 2)

July 16, 1982

Prior to consideration of a motion by the intervenors to reopen the record in this operating license proceeding to hear assertedly new evidence regarding break-downs on the quality assurance/quality control program for the plant, the Appeal Board seeks Commission guidance (by way of certification) on whether the Commission intended, in its November 19, 1981 order (CLI-81-30) suspending the Diablo Canyon low-power license and establishing an independent verification program, to deprive the adjudicatory boards of jurisdiction to consider quality assurance and quality control issues involving the plant.

**MEMORANDUM AND CERTIFICATION TO THE
COMMISSION**

On June 8, 1982, the "joint intervenors"¹ in the *Diablo Canyon* operating license proceeding filed with us a motion to reopen the record underlying the Licensing

¹ Collectively labeled, the joint intervenors are the San Luis Obispo Mothers for Peace, Scenic Shoreline Preservation Conference, Inc., Ecology Action Club, Sandra Silver, Gordon Silver, Elizabeth Apfelberg and John J. Forster.

Board's July 17, 1981 partial initial decision² that authorized a license for fuel loading and low-power testing. The joint intervenors' appeal from that low-power decision is currently before us for decision. The joint intervenors now wish to submit "significant new evidence of the recently established breakdowns in the Diablo Canyon Quality Assurance and Quality Control ('QA/QC') program."³ In addition, the joint intervenors seek vacation of the Licensing Board's QA/QC finding contained in the low power decision⁴ and revocation of the Diablo Canyon low-power license. In support of their motion, joint intervenors have filed an extensive affidavit of Richard B. Hubbard, a registered quality engineer, detailing numerous alleged QA/QC problems at the Diablo Canyon facility.

On September 21, 1981, subsequent to the Licensing Board's low-power decision and the Commission's review under the immediate effectiveness rule,⁵ the NRC staff issued a license to PG&E for fuel loading and low-power testing up to 5% of rated power for the Diablo Canyon Plant, Unit 1.⁶ Thereafter, on November 19, 1981, the Commission suspended, pursuant to 10 CFR 2.202, the low-power license because certain new information raised doubts about the adequacy of PG&E's quality assurance program.⁷ In suspending the license, it stated that "[h]ad this information been known to the Commission . . . Facility License No. DPR-76 would not have been issued until the questions raised had been resolved."⁸ To resolve the questions surrounding PG&E's QA program the Commission ordered an independent design verification program.⁹ That program is now under way.

Governor Edmund G. Brown, Jr., representing the State of California in the operating license proceeding (and also an appellant in the appeal of the Licensing Board low-power decision), supports and joins¹⁰ the joint intervenors' motion to reopen the record. The Governor argues that the motion satisfies the criteria governing the reopening of a closed adjudicatory record and asserts that the "parties now have the right, under the Atomic Energy Act and Administrative Procedure Act, to a hearing on quality assurance at Diablo Canyon given the

² *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Plant, Units 1 and 2), LBP-81-21, 14 NRC 107 (1981).

³ Joint Intervenors' Motion To Reopen at 1.

⁴ See LBP-81-21, 14 NRC at 116.

⁵ See 46 *Fed. Reg.* 28627, 28630 (May 28, 1981); *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-81-22, 14 NRC 598 (1981).

⁶ License No. DPR-76.

⁷ *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-81-30, 14 NRC 950 (1981).

⁸ *Id.* at 951.

⁹ *Id.* at 955-958.

¹⁰ Governor Brown's response to joint intervenors' motion notes that he is not filing a separate motion to reopen the record in order to avoid repetitious filings. Response at 1, n.1.

significant new information that has come to light since the record was closed and the low power license suspended.”¹¹

The staff and PG&E contend that the motion to reopen the record should be denied. The reasons assigned in support of this result, however, differ markedly. The staff recognizes the highly unusual posture of this proceeding and argues that the motion should be denied without prejudice to the refiling of a similar motion at a later time. According to the staff, even though the joint intervenors’ motion appears to meet the standards for reopening the record, it would be inappropriate to commence a hearing while the independent verification program in which intervenors are participating is still ongoing. This is so because the present program may resolve intervenors’ concerns. The staff also argues that it is unnecessary — and in any event inappropriate in light of the Commission’s oversight of the verification program — to revoke the low-power license as joint intervenors have requested.

On the other hand, PG&E argues that the Commission’s November 19, 1981 order suspending the low-power license has divested the adjudicatory boards of jurisdiction to reopen the record. According to PG&E, “the Commission has assumed complete jurisdiction over the low-power license . . . to resolve the quality assurance and design issues that have arisen at Diablo Canyon.”¹² In effect, PG&E contends that the Commission has already determined to resolve the QA/QC issues at Diablo Canyon outside the adjudicatory process, and the intervenors have no right under Atomic Energy Act and the Commission’s regulations to have the record reopened.¹³ In the alternative, PG&E asserts that the joint intervenors have failed to meet the requirements for reopening the record.

Before we can reach the question whether joint intervenors’ motion meets the standards for reopening the record, we must address the jurisdictional question raised by PG&E. Specifically, we must consider whether the Commission intended its November 19 enforcement order (or, if not, whether it now intends) to deprive the adjudicatory boards of jurisdiction to entertain the joint intervenors’ motion regarding the QA/QC issues at Diablo Canyon. In confronting this question, we believe the unusual circumstances at Diablo Canyon make it appropriate to seek guidance directly from the Commission. Accordingly, we certify to the Commission under 10 CFR 2.785(d) the following questions:

Did the Commission intend its November 19, 1981 order suspending the low-power license for Diablo Canyon, Unit 1, and establishing an independent verification program to deprive the appropriate adjudicatory boards of

¹¹ *Id.* at 4.

¹² PG&E Response at 22.

¹³ The utility’s response does not discuss the threshold question whether its interpretation of the Commission’s November 19 suspension order is consistent with the Atomic Energy Act, 42 U.S.C. §2239, the Administrative Procedure Act, 5 U.S.C. §§556 and 557, and the Commission’s regulations and case law.

jurisdiction to consider a motion to reopen the record based on the QA/QC questions regarding Diablo Canyon?

If not, does the Commission now wish to relieve the adjudicatory boards of jurisdiction with regard to the QA/QC issues at Diablo Canyon?

If the Commission has not divested, and does not intend to divest, the adjudicatory boards of jurisdiction over the QA/QC issues at Diablo Canyon what, if any, instructions does the Commission have with regard to timing or other matters raised by the motion to reopen?

We believe certification of these questions to the Commission is warranted for several reasons. First, although the joint intervenors' motion is aimed at the Licensing Board's low-power decision and its underlying record, a similar motion may well be filed with regard to the Licensing Board's full-power decision which is expected to be issued shortly. Therefore, because the issue is likely to arise again in this proceeding, deciding the jurisdictional questions now may ultimately save considerable Commission resources and avoid delay in the licensing process for the Diablo Canyon facility. Second, the Commission's *Statement Of Policy On Conduct Of Licensing Proceedings* encourages the adjudicatory boards to certify to it significant legal and policy questions in order to avoid licensing delays.¹⁴ Here, because the certified matters involve both legal and policy questions that hold considerable potential for causing licensing delay, they are most appropriate for Commission resolution.

We shall hold the joint intervenors' motion to reopen the record in abeyance pending the Commission's determination of the certified questions or until we receive further instructions from the Commission (such as directions to forward the motion to it for decision).

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

¹⁴ CLI-81-8, 13 NRC 452, 456-57 (1981).

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

**Gary J. Edles, Chairman
Dr. W. Reed Johnson
Stephen F. Ellperin**

In the Matter of

**Docket No. 30-6931
Renewal of Byproducts
Material License No.
19-08330-03**

**ARMED FORCES RADIOBIOLOGY
RESEARCH INSTITUTE
(Cobalt-60 Storage Facility)**

July 16, 1982

The Appeal Board reverses a Licensing Board decision (LBP-82-24, 15 NRC 652 (1982)) that held petitioner did not have standing to intervene in this materials license renewal proceeding. The Appeal Board grants the request to intervene, remands the proceeding to the Licensing Board with instructions to allow the petitioner to supplement its petition in accordance with 10 CFR 2.714(b), and orders the proceeding be consolidated with another proceeding involving renewal of the operating license for a research reactor of the same licensee, housed in the same building, if petitioner can present a litigable contention with regard to the materials license. The Appeal Board discusses the statutory requirements for notice in materials licensing cases and recommends that the Commission consider the issue in a rulemaking.

RULES OF PRACTICE: INTERVENTION (INTEREST)

An intervention petitioner who resides near a nuclear facility need not show a causal relationship between injury to its interest and the licensing action being

sought in order to establish standing. *Virginia Electric and Power Co.* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-522, 9 NRC 54, 57 n.5 (1979).

RULES OF PRACTICE: INTERVENTION (INTEREST)

In a materials license renewal proceeding under 10 CFR Part 30 — as in construction permit and operating license proceedings under 10 CFR Part 50 — proximity to a large source of radioactive material is sufficient to establish the requisite interest for standing to intervene. Whether a petitioner's stated concern is in fact justified must be left for consideration when the merits of the controversy are reached.

RULES OF PRACTICE: OFFICIAL NOTICE (INFORMATION IN SEPARATE PROCEEDINGS)

Official notice of information in another proceeding is permissible where the parties to the two proceedings are identical, there was an opportunity for rebuttal, and no party is prejudiced by reliance on the information. See *United States v. Pierce Auto Freight Lines*, 327 U.S. 515, 527-30 (1945); 10 CFR 2.743(i).

APPEARANCES

Ms. Elizabeth B. Entwisle, Silver Spring, Maryland (with whom **Ms. Laura W. S. Macklin**, Washington, D.C., was on the brief), for the petitioner, Citizens for Nuclear Reactor Safety, Inc.

Mr. David C. Rickard, Washington, D.C. (**Mr. Robert L. Brittigan**, Washington, D.C., on the brief), for the licensee, Armed Forces Radiobiology Research Institute.

Mr. Bradley W. Jones for the Nuclear Regulatory Commission staff.

DECISION

Before us is an appeal by the Citizens for Nuclear Reactor Safety, Inc. (CNRS), from a Licensing Board decision denying (i) its petition to intervene and accompanying request for a hearing on the renewal of a 10 CFR Part 30 materials license for

a cobalt-60 source, and (ii) its request to consolidate the Part 30 proceeding with a companion case involving renewal of a 10 CFR Part 50 license for a TRIGA reactor operated by the same licensee and housed in the same building.¹ For the reasons explained below, we reverse the Licensing Board's decision, grant the request to intervene, and order the proceeding to be consolidated with the Part 50 proceeding if CNRS can present a litigable contention with regard to the materials license.

I. BACKGROUND

On August 28, 1980, the Armed Forces Radiobiology Research Institute (AFRRI) filed with this Commission an application for renewal of its Part 30 byproduct material license. The license authorizes AFRRI to possess up to 320,000 curies of radioactive cobalt-60 in a water-shielded irradiation facility located on the grounds of the National Naval Medical Center in Bethesda, Maryland, primarily for use in radiobiology research. On July 28, 1981, the NRC's Director of Nuclear Material Safety and Safeguards (NMSS) granted AFRRI's application and amended the license to extend until July 31, 1986.

On August 7, 1981, petitioner CNRS, in a letter to the Secretary of the Commission, requested a hearing on the renewal of the license for the cobalt-60 facility. The letter stated that most of petitioner's members live or work in Montgomery County (where the facility is situated) and that at least three members live within five miles of the facility. Petitioner attached an affidavit of one member residing 3.0 miles from the facility.² The letter also described a recent incident involving the storage facility in which the mechanism used to raise the cobalt-60 out of its shielding water "jammed," exposing the material "with its lethal gamma radiation" for a period of time lasting from April 22 until May 16, 1981.

On August 29, 1981, CNRS filed with the Commission a petition to intervene and request for a hearing. The petition asserted that renewal of AFRRI's license for the cobalt facility "maintains and exacerbates" the following several hazards to those members of CNRS who reside nearby:

- (1) [c]ontinuous and long-term exposure to low-level gamma radiation emanating from the storage facility,
- (2) the potential exposure to higher doses of gamma radiation resulting from an accident such as the one that occurred at the storage facility between April 22 and May 16, 1981, and
- (3) the potential exposure to higher doses of gamma radiation resulting from acts of terrorism and seizure of some or all of the cobalt inventory.

¹ A TRIGA is a low power experimental reactor often used for training or research.

² Affidavit of Elizabeth French, attached to letter of Elizabeth Entwisle to Samuel Chilk, Secretary of the Commission (August 7, 1981).

CNRS also requested that a hearing on the cobalt-60 license be consolidated with the ongoing proceeding in Docket No. 50-170 for renewal of AFFRI's operating license for the TRIGA reactor. That proceeding, in which CNRS is an intervenor, is currently in the discovery phase. See App. Tr. 22, 49-50.

The Commission directed that a Licensing Board be designated to review CNRS' hearing request. In a decision issued on March 31, 1982, that Board determined that CNRS lacked the requisite standing under 10 CFR 2.714 and denied intervention. LBP-82-24, 15 NRC 652 (1982). Its decision on the hearing request made it unnecessary for the Board to address the related request for consolidation. This appeal followed. Both the licensee and the staff originally urged affirmance of the Board's decision. In a motion filed with us on June 8, however, the staff, with the licensee's support, urged us to remand the proceeding to the Licensing Board so that it could consider certain factual information that was not before it at the time of its decision.

We reverse the Licensing Board's decision. Because we believe CNRS has established its standing to intervene, we see no need to have the Licensing Board rule on the intervention request as the staff urges in its motion. The staff's motion is therefore denied. We also believe no useful purpose would be served by asking the Licensing Board to rule on the consolidation request.

II. ANALYSIS

A. Standing

The Licensing Board essentially determined that CNRS had no standing because, as a factual matter, it failed to show any causal link between the cobalt-60 material and possible injury to its members, *i.e.*, how the gamma radiation emanating from the cobalt-60 might reach its members living near the facility. In *Virginia Electric and Power Co.* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-522, 9 NRC 54, 57 n.5 (1979), however, a case chiefly relied on by the petitioner, we explicitly rejected the argument that, in order to establish standing, a person who lives near a nuclear facility must " 'particularize a causal relationship between injury to [his or her] interest' and the licensing action being sought."

To distinguish *North Anna*, the Licensing Board reasoned that this case involves radiation from a non-reactor source; thus, a petitioner must show how the radiation would be released to the public in order to establish standing. We disagree. Although our *North Anna* decision involved a spent fuel pool expansion amendment to a Part 50 license, there is nothing in the logic of that decision to suggest that the basic principle that causality need not be shown should be limited to cases involving Part 50 licenses. Indeed, that decision explicitly rejected the argument that our earlier decisions should be restricted to construction permit and operating

license proceedings as opposed to license amendment proceedings involving proposed licensing action of more limited geographical reach. *Id.* at 56. Since the concept of geographic proximity is not limited to cases involving Part 50 licenses, the Licensing Board was wrong to require that the petitioner, to demonstrate standing, show in addition a causal relationship between injury and the licensing action being sought.

Our *North Anna* decision not only refutes the basis of the Licensing Board's decision, it also establishes the petitioner's standing in this case. In *North Anna*, one of the members of petitioner's organization who resided on the lakeshore very near the plant asserted that the proposed spent fuel pool expansion might result in ground water contamination, which in turn might affect the well water on her property. These assertions *per se* established the petitioner's standing. We stated:

[W]e have never required a petitioner in such geographical proximity to the facility in question to establish, as a precondition to intervention, that his concerns are well-founded in fact. . . . Rather, close proximity has always been deemed to be enough, standing alone, to establish the requisite interest.

Ibid. Whether the petitioner's concern was in fact justified, we held, "must be left for consideration when the merits of the controversy are reached." *Ibid.*

The uncontested affidavits filed in this proceeding establish that at least one member of petitioner's organization lives as close as three miles from a substantial source of radioactive material. The inventory of radioactive cobalt at the facility is described as being one of the largest in the United States.³ This proximity to a large source of radioactive material establishes petitioner's interest. Indeed, in *Duke Power Co. v. Carolina Environmental Study Group*, 438 U.S. 59, 74 (1978), the Supreme Court suggested generally that the release of any sort of radiation constitutes an injury in fact to persons in the area surrounding a nuclear facility:

[T]he emission of non-natural radiation into appellees' environment would also seem a direct and present injury, given our generalized concern about exposure to radiation and the apprehension flowing from the uncertainty about the health and genetic consequences of even small emissions like those concededly emitted by nuclear power plants [footnote omitted].

In sum, petitioner has sufficiently alleged (1) an injury in fact that has occurred or will probably result from the licensee's action and (2) an interest that is arguably — here concededly — within the "zone of interest" of the Atomic Energy Act.

³ We also take official notice of uncontested affidavits filed in the TRIGA reactor proceeding establishing that CNRS has at least one member who lives as close as three-tenths of a mile from the AFRRI facility. See Amendment to Petition for Leave to Intervene (January 16, 1981), filed in Docket No. 50-170 (Renewal of Facility License No. R-84). Counsel for petitioner stated at oral argument that this particular individual is still a member of CNRS. App. Tr. 18. Official notice of information in another proceeding is permissible where, as here, the parties to the two proceedings are identical, there was an opportunity for rebuttal, and no party is prejudiced by reliance on the information. See *United States v. Pierce Auto Freight Lines*, 327 U.S. 515, 527-530 (1945); 10 CFR 2.743(i).

Portland General Electric Co. (Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610, 613-14 (1976).

We recognize that upon further analysis it may turn out that there is no way for the radiation emanating from the cobalt inventory of the AFRRI facility to cause harm to persons living nearby. Nonetheless, neither we nor the Licensing Board can decide, at this early stage of the proceeding, that there is no reasonable possibility that such harm could occur. *North Anna, supra*, 9 NRC at 56. As we recognized in *North Anna*, CNRS' contentions will of course be susceptible to a motion for summary disposition under 10 CFR 2.749. At that point, parties may challenge their bases in fact. *Ibid.*

B. Consolidation

CNRS suggests that consolidation with the TRIGA reactor hearing is both practical and appropriate in the event that it presents a litigable contention. See App. Tr. 26-27, 82-83. The cobalt-60 and TRIGA reactor proceedings involve exactly the same parties. Given that the two facilities are located in the same building, it is reasonable to presume that there will be common questions of fact raised in both proceedings, such as matters relating to emergency planning. See App. Tr. 22, 75. Moreover, the two Licensing Boards are identical. While we appreciate that the hearing provided by section 189(a) of the Atomic Energy Act of 1954, 42 U.S.C. 2239(a), need not necessarily be a formal trial-type adjudicatory proceeding where a materials licensing action is involved,⁴ we believe that it is sensible to combine the proceedings in this case in order to avoid duplication of effort and delay. We therefore instruct the Licensing Board to consolidate the proceedings if CNRS can present one litigable contention with regard to the materials license. See 10 CFR 2.716.

C. Notice

The concurring opinion raises an issue for Commission consideration — *i.e.*, the issue of notice — that need not be decided in order to resolve this appeal. We do not decide it, although we agree that the Commission might find it useful to explore it.

The factual circumstances of the instant case — a very large source of radioactive material accompanied by an interest in the safety of the facility by a local civic

⁴ See *Kerr-McGee Corp.* (West Chicago Rare Earth Facility), CLI-82-2, 15 NRC 232 (1982), *petition for review pending sub nom. City of West Chicago v. Nuclear Regulatory Commission*, No. 82-1575 (7th Cir., filed April 8, 1982).

group that may have been misled somewhat by a Government spokesman⁵ — may make this case an attractive vehicle for suggesting a broad requirement for public notice. It is not entirely clear that such a requirement is mandated by law, administratively sensible, or sufficiently important to warrant an expenditure of the Commission's time and effort for all materials licensing matters. We are convinced, however, that the issue is a complicated one from both a legal and practical standpoint, plainly better suited to rulemaking than adjudicatory resolution.

The Licensing Board's decision is *reversed*, the petitioner's request to intervene is *granted*, and the proceeding is *remanded* to the Board with instructions to allow the petitioner to supplement its petition in accordance with 10 CFR 2.714(b) and, if CNRS can present a litigable contention with regard to the materials license, to consolidate the instant proceeding for hearing with the TRIGA renewal proceeding, Docket No. 50-170.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

⁵ See concurring opinion, p. 157, *infra*.

CONCURRING OPINION OF MR. EILPERIN

I fully join in Parts II.A and II.B of the Board's opinion, but write separately to emphasize somewhat more than do my colleagues a recurring notice problem that surfaced in this case. The petitioner learned of the renewal of AFRRI's cobalt-60 license only through the most informal means.¹ The Commission's regulations do not specify any kind of formal notice for materials license actions such as these.² And in the past, the Commission has suggested that there may be no notice requirement flowing from any other source of law. However, the Commission has been hesitant to decide the question finally.³

Because the notice question is not directly in issue in this case (see n.1, *supra* (concurring opinion)), this Board also is not required to decide what kind of notice

¹ On February 4, 1981, petitioner's counsel was informed by the NRC staff that action on the materials license renewal would await a final decision on AFRRI's application for a renewal of its TRIGA reactor operating license. On August 6, 1981 because counsel was about to appear on a radio talk show, she telephoned the NRC to make sure her understanding of the status of the materials license application was current. She was then told that the license was about to issue. In fact, it had issued more than a week earlier, on July 28. App. Tr. 9-10; letter of Elizabeth Entwisle to Samuel Chilk (August 7, 1981), attached as Appendix A to CNRS Brief in Response to Arguments in Opposition to its Appeal (May 21, 1982).

The notice question is not directly in issue in this case because the Licensing Board ruled that a party is excused from the requirement of timely requesting a hearing where it relied on the staff's advice that it could await further staff action before making a formal hearing request. 15 NRC at 658.

Because in a materials license case no formal notice is given of the prospective licensing action, what constitutes a "timely" request for a hearing is something of a puzzle. Here, where the request for hearing followed on August 7, immediately after accurate informal notice was given, there is no doubt the hearing request was timely. In this connection, I am constrained to note my disagreement with the Licensing Board's apparent theory that, but for the staff's misinformation, the petitioner's hearing rights would have evaporated because the issuance of a materials license renewal is not a "proceeding" within the meaning of Section 189(a) of the Atomic Energy Act. 15 NRC at 656-57. The Commission's *Kerr-McGee* decision, note 4, *supra*, establishes that an interested person has a right to a hearing on a materials license application. See p. 158, *infra*. Those rights cannot be cut off as untimely exercised where no notice of any kind is provided.

² *Kerr-McGee*, *supra*, 15 NRC at 244-46.

³ In *Edlow International Co.* (Agent for the Government of India to Export Special Nuclear Material), CLI-76-6, 3 NRC 563, 581 (1976), the Commission referred to the petitioners' concession, which it termed accurate, "that no legal obligation exists to give public notice of materials license applications, either for export or domestic use." Yet at another point in that opinion the Commission stated (*id.* at 579):

The whole question of procedures to be followed in these matters, including consideration of the issues of public notice and timeliness is under current Staff review, which we anticipate may result in amendments to the Commission's Rules of Practice at an early date. Meanwhile, in evaluating what type of public notice is appropriate for nuclear material export licenses, we believe that a thirty-day notice period would be reasonable, unless in a particular case a shorter period is required. Based on our past experience, it is questionable whether there will be sufficient sustained interest in the numerous materials export licenses considered by the NRC each year, to warrant publication of every license application in the *Federal Register*. Pending completion of our overall study, we believe adequate public notice will be provided by posting applications received in the Commission's Public Document Room (PDR) together with a periodic mailing of recent filings to any requester with a particular interest in receiving them.

Commission regulations that implement Section 304(b) of the Nuclear Non-Proliferation Act of 1978, Pub. L. No. 95-242, 92 Stat. 120, put in place a formal notice system for export license applications. See 10 CFR 110.70. See p. 158, *infra*.

must be provided for a materials license application. I raise the question only because I think the issue is important and I wish to prompt further Commission consideration of it.

It is clear to all that Section 189(a) of the Atomic Energy Act in terms affords interested persons an opportunity to request some kind of hearing with regard to *all* licensing actions, including actions involving materials licenses. The Commission has squarely held this in its recent *Kerr-McGee* decision. 15 NRC at 247. Given this premise of a statutory right to a hearing, it would seem to follow that some kind of notice is required so that the right to a hearing is not lost by inadvertent default. *Mullane v. Central Hanover Bank and Trust Co.*, 339 U.S. 306, 314 (1950). See also *Eisen v. Carlisle & Jacquelin*, 417 U.S. 156, 173-175 (1974); *Walker v. Hutchinson*, 352 U.S. 112, 115 (1956); *North Alabama Express, Inc. v. United States*, 585 F.2d 783, 789 (5th Cir. 1978). *But cf. Sholly v. Nuclear Regulatory Commission*, 651 F.2d 780, 787 n.20 (D.C. Cir. 1980), *rehearing en banc denied*, 651 F.2d 792, *cert. granted*, 101 S. Ct. 3004 (1981).

I recognize that in devising a notice system the Commission must take into account the extensive number of licensing actions acted upon each year.⁴ In this regard, the system the Commission adopted in implementation of the Nuclear Non-Proliferation Act of 1978 may prove instructive. The Commission places a copy of every export license application in the Public Document Room and periodically mails a list of these applications to persons or organizations who have requested notification. 10 CFR 110.70(a), (c). In addition, the Commission publishes in the *Federal Register* notice of receipt of what it considers major applications. 10 CFR 110.70(b). An interested person may file a petition to intervene or request a hearing on any export license application, major or minor, within 30 days of notice in the *Federal Register* or 15 days if noticed by placement in the Public Document Room. 10 CFR 110.82. Despite the hundreds of export license actions taken each year,⁵ it is my understanding that this notice system has not proved to be either onerous or unworkable. Nor has it led to a plethora of hearing requests, let alone frivolous hearing requests.

A similar system may be suitable for materials license applications. While the number of materials license actions is greater, given their basically noncontroversial nature, it is highly problematical that the Commission would be inundated by requests for periodic mailings. Moreover, because the number of major materials license actions is no doubt quite small to vanishing, the Commission could largely (or perhaps completely) dispense with providing notice in the *Federal Register*. The system could also be structured to discourage frivolous hearing requests by

⁴ In fiscal year 1980, the NRC took 4,614 actions on Parts 30, 40 and 70 materials licenses. Approximately one-fifth of these (885) were license renewals and three-quarters (3,008) concerned license amendments. The remainder (721) were applications for new licenses. U.S. Nuclear Regulatory Commission, 1980 *Annual Report*, at 110.

⁵ See 1980 *Annual Report*, note 4, *supra*, at 171.

requiring a thorough statement of the petitioner's interest and making full use of the Commission's authority to hold legislative rather than adjudicatory hearings. See generally *Kerr-McGee, supra*, 15 NRC at 247-62.⁶

In short, I think the practical problems of a notice system for materials license applications are probably far less than my colleagues imagine. More importantly, I think the legal issue is far clearer than they intimate. The matter is obviously one for study and decision by the Commission, most appropriately through rulemaking.

⁶ Where renewal requests are involved, the licensee, of course, may continue to operate under its old license until the renewal request is processed. Administrative Procedure Act, Section 9(b), 5 U.S.C. 558; 10 CFR 2.109.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL PANEL

Alan S. Rosenthal, Chairman

In the Matter of

Docket Nos. 50-522
50-523

PUGET SOUND POWER AND LIGHT COMPANY,
et al.
(Skagit/Hanford Nuclear Power Project,
Units 1 and 2)

July 27, 1982

Acting under the authority of 10 CFR 2.787(b), the Appeal Panel Chairman dismisses an interlocutory appeal by intervenors of the Licensing Board's rejection of certain of their contentions.

RULES OF PRACTICE: INTERLOCUTORY APPEALS

A person may take an interlocutory appeal from an order entered on his or her intervention petition only where the order has the effect of denying the petition in its entirety. 10 CFR 2.714a.

APPEARANCE

Mr. Terence L. Thatcher, Portland, Oregon, for the intervenors, National Wildlife Federation and Oregon Environmental Council.

MEMORANDUM AND ORDER

In a July 6, 1982 memorandum and order (unpublished), the Licensing Board ruled on the admissibility of, *inter alia*, the contentions jointly advanced by the intervenors National Wildlife Federation and Oregon Environmental Council in this construction permit proceeding. Although several were admitted to the proceeding, Contention 5 was rejected. The intervenors seek to appeal that rejection under 10 CFR 2.714a. Their appellate papers also complain of what they deem to have been the implicit rejection of one of the bases assigned for accepted Contention 3.

It would appear that intervenors' counsel has not read Section 2.714a with care. By its express terms, that Section permits a person to take an interlocutory appeal from an order entered on his or her intervention petition only in circumstances where, unlike here, the order has the effect of denying the petition *in its entirety*. Accordingly, the appeal at bar must be, and hereby is, summarily *dismissed*. *Texas Utilities Generating Co.* (Comanche Peak Steam Electric Station, Units 1 and 2), ALAB-599, 12 NRC 1, 2 (1980), and cases there cited.¹

It is so ORDERED.

FOR THE APPEAL PANEL
CHAIRMAN

C. Jean Shoemaker
Secretary to the
Appeal Panel

This action was taken by the Appeal Panel Chairman under the authority of 10 CFR 2.787(b).

¹ If intervenors are dissatisfied with the initial decision ultimately rendered by the Licensing Board in the proceeding, they will be entitled to take an appeal from it under 10 CFR 2.762(a). On that appeal, they will be free to raise the matter of the Licensing Board's threshold treatment of Contentions 3 and 5.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

**Christine N. Kohl, Chairman
Dr. John H. Buck
Thomas S. Moore**

In the Matter of

**Docket Nos. 50-329-OM&OL
50-330-OM&OL**

**CONSUMERS POWER COMPANY
(Midland Plant, Units 1 & 2)**

July 27, 1982

The Appeal Board dismisses without prejudice an intervenor's purported appeal from a Licensing Board order, LBP-82-35, 15 NRC 1060 (1982), which authorized certain interim amendments to the Midland construction permits pending subsequent issuance of the Board's partial initial decision. The Appeal Board construes the intervenor's filings as a complaint against staff's compliance with and implementation of the Licensing Board's order, rather than the order itself, and leaves the matter to the intervenor to present to the Licensing Board.

RULES OF PRACTICE: JURISDICTION OF BOARDS

Issues relating to compliance with and implementation of a Licensing Board order, rather than the order itself, should be presented to the Licensing Board in the first instance, rather than to the Appeal Board.

**RULES OF PRACTICE: TIME LIMITS FOR FILING
EXCEPTIONS**

Although the time limits established by the Rules of Practice with regard to appeals from Licensing Board decisions and orders are not jurisdictional, Appeal Board policy is to construe them strictly. *Nuclear Engineering Co.* (Sheffield, Illinois, Low-Level Radioactive Waste Disposal Site), ALAB-606, 12 NRC 156, 160 (1980). Hence, untimely appeals are not accepted absent a demonstration of "extraordinary and unanticipated circumstances." See 10 CFR Part 2, Appendix A, IX(d)(3).

APPEARANCES

Ms. Barbara Stamiris, Freeland, Michigan, intervenor *pro se*.

Mr. Michael I. Miller, Chicago, Illinois, for the licensee-applicant, Consumers Power Company.

Mr. Michael N. Wilcove for the Nuclear Regulatory Commission staff.

MEMORANDUM AND ORDER

1. Intervenor Barbara Stamiris purports to appeal the Licensing Board's April 30, 1982, memorandum and order, which authorized, pending subsequent issuance of the Board's partial initial decision, certain interim amendments to the construction permits for the two-unit Midland facility. See LBP-82-35, 15 NRC 1060 (1982). Exceptions to the Board's memorandum and order were due May 18, 1982. *Id.* at 1073; 10 CFR 2.762(a), 2.710.¹ Ms. Stamiris' appeal was dated June 7, 1982, and, by her own admission, was untimely. In one letter accompanying her appeal and another dated June 14, she asserts that there is good cause for our consideration of her late appeal. We treated Ms. Stamiris' letters as a motion for leave to file an appeal out of time and requested responses from the other parties. Order of June 22, 1982 (unpublished). Consumers Power and the NRC staff each replied, opposing intervenor's request. Consumers Power also moved to strike the appeal, but Ms. Stamiris did not respond. We grant the motion and dismiss the appeal for the reasons discussed in point 3 below.

¹ Our unpublished order of June 22, 1982, incorrectly stated that exceptions were due May 13, 1982.

2. We need not repeat the Licensing Board's thorough discussion of the background and events leading to its authorization of interim amendments to the Midland construction permits. See 15 NRC at 1060-71. Suffice it to say that the Board felt compelled to impose short-term conditions now, before completion of hearings and issuance of its initial decision, on the ongoing soil-remedial activities by Consumers Power under its existing permits. Essentially these conditions require Consumers Power to obtain explicit staff approval before undertaking specified soil-related activities. *Id.* at 1072-73. But for the Board's order, Consumers Power would have been free under its original permits to engage in these activities, without any form of staff approval, while the soil settlement matter is still being litigated. *Id.* at 1063. In ordering this increased staff oversight of the construction at Midland, the Board expressly refrained from "dictat[ing] the manner in which the Staff may exercise its review" and excluded those construction activities already approved by the staff but apparently not yet undertaken. *Id.* at 1071.

On May 26, 1982, the staff issued the amendments to the Midland construction permits. Their terms track almost verbatim the conditions imposed by the Board's order. See Construction Permit No. CPPR-81, Amendment No. 3, and Construction Permit No. CPPR-82, Amendment No. 3 (May 26, 1982); 15 NRC 1072-73. On the preceding day, the staff notified Consumers Power that it was discontinuing its prior practice (with which the utility had voluntarily complied) of approving each individual construction step in favor of "review . . . as an integrated package." The staff also indicated, however, that "those [activities] for which staff review was substantially completed as of April 1, 1982, are . . . approved," and identified Phase 2 underpinning activities as falling within that category. Letter from Darrell G. Eisenhut, Director, NRC Division of Licensing, to J. W. Cook, Vice President, Consumers Power Company (May 25, 1982) at 1. It is apparently this staff letter and the May 26 permit amendments that have triggered Ms. Stamiris' appeal.

3. After considering the pleadings in this matter, including Ms. Stamiris' letters and tendered brief, we believe the real issue at hand is not whether intervenor has satisfied the standard for our acceptance of an untimely appeal, but rather whether intervenor, in fact, appeals any Licensing Board action. To be sure, Ms. Stamiris states in her June 14 letter that this "is an appeal against the Board's 4/30/82 Memorandum." She also gives the reasons in her June 7 and June 14 letters why she believes she has established "good cause" for the tardiness of her appeal. But those reasons, as well as the accompanying brief on the merits of her appeal, convince us that intervenor's complaints are not really directed against the Licensing Board's April 30 decision. Rather, the alleged harm she seeks to redress by appeal is certain staff action that has occurred since the Board's order.

For example, in urging acceptance of her late-filed appeal, intervenor states that she viewed the Licensing Board's decision as "an attempt to strengthen the

controls on Consumer[s'] soils remedial work" and "trusted" the NRC staff to abide by an earlier "commitment" to refrain from a piecemeal review of the utility's soil-remedial work. But after she received copies of the permit amendments and the staff's May 25 letter "granting concurrence for Phase [2] remedial work," intervenor "realized that the hearing process and its ultimate outcome [were] being prejudged by the actions that were taking place under the terms of the [amendments,]" and she "began work on this appeal immediately." Stamiris Letter to Appeal Board (June 7, 1982). See also Stamiris Letter to Appeal Board (June 14, 1982). Moreover, intervenor's brief contains no argument directed to the Licensing Board's April 30 decision. Instead, it is devoted principally to her concerns about the permit amendments themselves "as already implemented by the NRC in their recent approval of Phase [2] underpinning work." Intervenor Appeal (June 7, 1982) at 2. See also *id.* at 4, 7, 10, 11.

Thus, intervenor's appeal raises issues relating to staff compliance with and implementation of the Board's order, rather than the order itself. We believe that these are matters best left to the Licensing Board's judgment in the first instance. This is particularly so, given Ms. Stamiris' concern that the staff's actions may have prejudged the future soil-related hearings to be conducted by the Board and foreclosed consideration of some Board members' questions. *Id.* at 2, 3, 7, 10; Stamiris Letter (June 7, 1982).² Intervenor has erroneously brought her arguments to us instead of the Licensing Board. Accordingly, the appeal is dismissed without prejudice to intervenor's presentation of these same arguments to the Licensing Board.³

² We note in passing, however, that many of intervenor's arguments are not very persuasive. For instance, Ms. Stamiris fails to explain *how* the future Board hearings will be compromised, particularly given the Board's many references to the future evidentiary hearings and the following statement:

[w]e stress that in our forthcoming Partial Initial Decision we will reexamine the terms and conditions which we are here imposing on an *interim* basis. At that time, however, we may *reaffirm, expand or remove* them.

15 NRC at 1072 (emphasis added). Further, to the extent that intervenor objects to the manner in which the staff is conducting its review, (1) the Board expressly gave the staff discretion in that regard, as Ms. Stamiris acknowledges in her letter of June 7, and (2) at least for future remedial activities, the staff nonetheless appears to have committed itself to the integrated review intervenor wants. See *id.* at 1071; Eisenhut Letter, *supra*, at 1.

³ If we have misperceived the nature of intervenor's appeal and it is, in fact, directed to the Board's April 30 decision, we then dismiss it for failure to demonstrate the "extraordinary and unanticipated circumstances" that warrant acceptance of an untimely appeal. See 10 CFR Part 2, Appendix A, IX(d)(3). See also *Nuclear Engineering Co.* (Sheffield, Illinois, Low-Level Radioactive Waste Disposal Site), ALAB-606, 12 NRC 156, 160 (1980), where we held that, [a]lthough the time limits established by the Rules of Practice with regard to appeals from Licensing Board decisions and orders are not jurisdictional, our general policy has been to enforce them strictly." See, e.g., *Houston Lighting and Power Co.* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-547, 9 NRC 638 (1979); *Iowa Electric Light & Power Co.* (Duane Arnold Energy Center), ALAB-108, 6 AEC 195 (1973).

The reasons intervenor gives (see pp. 164-165, *supra*) do not present the extraordinary and unanticipated circumstances necessary for us to entertain her late appeal from the *Board's order*. Further, there could be no misunderstanding as to intervenor's right to appeal or the time for doing so, because the order itself clearly stated that any party could file exceptions within 10 days of service. 15

(Continued)

The motion to strike of Consumers Power is *granted*, and the appeal of Barbara Stamiris from the Licensing Board's April 30, 1982, memorandum and order is *dismissed*.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

NRC at 1073. Compare *Sheffield, supra*, 12 NRC at 159-160. We share intervenor's interest that the soil-related problems at Midland be fully explored and agree that issues of public health and safety must be of "paramount" concern. Stamiris Letter (June 7, 1982). But she has failed to convince us that the Board's April 30 order somehow puts those goals in jeopardy so as to warrant acceptance of her late appeal.

Finally, we do not decide whether Ms. Stamiris' appeal and brief should also be stricken for failure to conform to the requirements of 10 CFR 2.762(a), (c), and (d). See 10 CFR 2.762(f).

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

James L. Kelley, Chairman
Dr. A. Dixon Callihan
Dr. Richard F. Foster

In the Matter of

Docket Nos. 50-413
50-414

DUKE POWER COMPANY, *et al.*
(Catawba Nuclear Station,
Units 1 and 2)

July 8, 1982

The Licensing Board overrules various objections to its Order issued following a prehearing conference pursuant to 10 CFR §2.751a. The Board also denies requests for referral of certain issues to the Appeal Board.

RULES OF PRACTICE: SECURITY PLANS

Where an Intervenor seeking to challenge an Applicant's security plan does not produce a qualified expert to review the plan and declines to submit to a protective order, its vague contentions must be dismissed for failure to meet conditions that could produce an acceptably specific contention.

MEMORANDUM AND ORDER
(Overruling Objections Following Prehearing Conference, Denying
Requests For Referral to the Appeal Board, and Addressing Certain
Related Questions)

INTRODUCTION

Pursuant to 10 CFR 2.751a, the Applicants, the NRC Staff and Intervenor Palmetto Alliance (Palmetto) and Carolina Environmental Study Group (CESG) filed objections to various rulings in our Memorandum and Order of March 5, 1982 (LBP-82-16, 15 NRC 566), or, in the alternative, sought referral of some of those rulings to the Appeal Board. In our Memorandum and Order of June 30, 1982 (LBP-82-50, 15 NRC 1746) we rejected the Applicants' and the Staff's objections to our rulings on specificity of contentions and referred those rulings to the Appeal Board. We deal now with the Applicants' other objections, the objections of the Intervenor, and with certain related questions.

A. Applicants' Remaining Objections

1. Financial Qualifications

The Applicants, supported by the Staff, ask us to dismiss Palmetto Contentions 24 and 25, relating to the financial qualifications of small owners and to costs of decommissioning. They point out that these contentions are barred by new rules the Commission adopted shortly after our March 5 Order. *See 47 Fed. Reg. 13750*. We agree that these contentions are barred by the new rules; they are dismissed.

2. Service of Documents

The Applicants object to that portion of our Order that requires service on all parties of copies of relevant documents generated by the Applicants or the Staff. LBP-82-16, 15 NRC 590-91 (1982). We adhere to our Order and reject the Applicants' objections for the reasons stated by the Staff at pp. 17-19 of their Response dated April 20, 1982. We see no reason to refer this part of our Order to the Appeal Board.

3. Corbicula

Palmetto 43 (CESG 17) concerns possible effects of *Corbicula* on the performance of the cooling tower system. Our Order of March 5, 1982 admitted this

contention provided it was clarified and made much more specific following discovery. Applicants object, believing that the Board has placed a burden on them to provide the necessary specificity. Applicants have misinterpreted the Board's ruling. The burden for clarification and specificity of this contention remains with Intervenor. It was evident to the Board from the pleadings, the CP-FES and the FSAR that:

- (a) *Corbicula* is present and may infest the cooling tower system;
- (b) fouling of the Nuclear Service Water System by *Corbicula* is of sufficient concern to require control measures;
- (c) precisely where and to what extent fouling will occur is speculative. If the consequences of such fouling are safety related this issue should clearly be litigated.

Our March 5, 1982 Order did not say that the lack of specificity in the contention was grounds for rejection under 10 CFR 2.714. Rather we have attempted to focus discovery so that it would be clear as to whether the kind and magnitude of the consequences of a clam infestation would justify litigation. We reaffirm our conditioned admission of this contention. Intervenor has the burden of clarification and greater specificity.

B. Intervenor's Objections¹

1. The Burden of Further Specifications

The Intervenor objects to the conditional acceptance of most of their contentions and to the "burden of further specification" later when relevant information becomes available, or, in some cases, when discovery is complete. We reject this objection. Given the availability of information, the Commission's requirement of specificity in contentions is certainly reasonable. Assuming as we do the seriousness of the Intervenor's intentions, they will have to read and analyze relevant material as it becomes available. In that context, it is not unfairly burdensome to require them to add more specificity to their presently vague contentions. Indeed, the burdens involved in that task will be minor compared to those involved in the eventual litigation of this case.

2. Serious Accidents (Palmetto 5, 9, 31; CESG 2)

Although these contentions were rejected by the Board for lack of specificity, the door was left ajar for possible consideration of a site-specific credible accident

¹ The Intervenor Palmetto and CESG filed a single joint response and objections to the March 5 Order. Charlotte-Mecklenburg Environmental Coalition did not file objections.

at Catawba. Intervenors now return with descriptions of accidents which presumably could occur at any pressurized water reactor. The Applicants and the Staff are now asked to comment on whether any of these scenarios may form the basis for an acceptable contention. Comments shall be filed by July 30, 1982.

3. *Operator Qualifications*

We admitted conditionally Palmetto's Contention 8 on operator qualifications, subject to the responses we called for concerning whether this contention might be the equivalent of an impermissible attack on a Commission rule. Palmetto and the Staff urge the admission of this contention. The Applicants see it as an attack on the rules. This is a rather close question because the Commission did not make its intentions clear in its most recent rulemaking on the subject. However, we find the Staff's arguments persuasive and endorse the following summary of those arguments:

[W]hile litigation of Palmetto Contention 8 might ordinarily be barred as a challenge to the operator licensing requirements in 10 CFR Part 55, the Commission has, through its Revised Statement of Policy on TMI Action Plan requirements, authorized the litigation of such a contention and that authorization is not affected by the fact that TMI Action Plan requirements are now the subject of rulemaking. Palmetto Contention 8 may properly be admitted and litigated in this proceeding. Staff Response at 7.

Palmetto Contention 8 is now admitted unconditionally.

4. *Cost vs. Benefits*

The Intervenors object to our disallowance of Palmetto's Contentions 11, 12, 13, 30, 33, 34 and 39 and CESG's Contentions 1, 5, 6 and 12 concerning need for power, certain broad economic issues and financial factors said to affect the NEPA cost/benefit balance struck at the construction permit stage. We have considered their objections and adhere to our prior rulings. Most of the Intervenors' objections are, in substance, objections to the Commission's recently adopted rule barring litigation of need for power and alternative power sources in operating license cases.

In the alternative, the Intervenors ask us to "certify" (refer) to the Commission or Appeal Board the cost/benefit contentions we do not admit. Referral is an exception to the normal rule against interlocutory review of Licensing Board orders. The burden is on the movant to demonstrate that an issue meets established standards for referral (discussed briefly at 15 NRC 1754 of our Order of June 30, 1982). Here, the Intervenors simply ask for referral without any attempt to meet that burden. We see no obvious reasons for referral. The Staff opposes referral and

makes a persuasive showing that referral standards are not met. Staff Response of April 28, 1982 at 9-10. The Intervenor's request for referral of the admissibility of these cost/benefit contentions is denied. Following this denial, the Intervenor may seek directed referral from the Appeal Board. See *Public Service Co. of New Hampshire, et al.* (Seabrook Station), ALAB-271, 1 NRC 478, 482 (1975).

5. Spent Fuel Transportation and Storage (Palmetto 14-17, 38; CESG 11)

Palmetto has five contentions and CESG one contention about these subjects. Their concerns involve not only the spent fuel storage facilities at Catawba but also the potential transport of spent fuel from other Duke Power Company nuclear power stations to Catawba. In our Order of March 5 this Board asked the Applicants and the Staff to address questions about Duke's plans to use Catawba facilities to store fuel from other stations and to comment on our jurisdiction over applications to store or transport spent fuel from other facilities. Although, as the parties' submissions show, this Board lacks jurisdiction over shipment of spent fuel from other Duke facilities, we must consider the environmental impacts associated with its transport to, and storage at Catawba.

Palmetto Contention 14 asks for ". . . a full description and detailed analysis of the environmental effects of the transport of spent fuel shipments to the Catawba Plant from other Duke Power Company facilities and of the contribution of such effects to the environmental costs of licensing Catawba . . .", asserting that Summary Table S-4 does not apply because the destination of the spent fuel in transit would be the Catawba facility rather than a fuel reprocessing plant. The Board, in its Order of March 5, 1982, disallowed this contention because no reason has been advanced as to why Table S-4 values would not adequately describe the environmental effects.

Intervenor object (Response and Objections to Order Following Prehearing Conference, March 31, 1982) to this rejection, citing the wording associated with 51.20(g)(1) and Table S-4 which relates to the method of shipping. Intervenor do not assert that the method of transport will be different than that covered in 51.21(g)(2)(v) (truck, rail, or barge). No new information has been presented that invalidates the kind or magnitude of effects presented in Summary Table S-4. Therefore, we reaffirm our rejection of this contention.

Palmetto Contention 15 asserts that ". . . the favorable cost-benefit balance struck at the construction permit phase . . ." is compromised by expanding the Catawba fuel storage facilities to accommodate fuel from other Duke stations, and by the transport of such fuel. We admitted this contention provided the words "Away From Reactor" were stricken. We need also to confine this issue to the action now before us, which is a license to operate the constructed plant. Palmetto Alliance may resubmit this contention based on the OL Environmental Statement,

when issued, and subject to the conditions of our Order of March 5, 1982 (LBP-82-16, 15 NRC 580-81).

Palmetto Contention 16 asserts that Applicants have not demonstrated their ability to transport and store irradiated fuel assemblies from other Duke facilities so as to provide reasonable assurance that the health and safety of the public is not endangered. In our Order of March 5 we admitted this contention conditionally, subject to revision in light of information we received in response to our questions. We now exclude the portion of this contention which relates to the transport of irradiated fuel because the safety aspects of this activity are controlled by 10 CFR Parts 71 and 73, and by DOT regulations and is outside the scope of this hearing. The portion of this contention which relates to the storage of irradiated fuel assemblies from other Duke facilities at Catawba is admitted.

Palmetto Contention 17 is concerned with provisions for safe storage of irradiated fuel at Catawba after expiration of the license for the facility. Our March 5 Order rejected this contention because it lies beyond the scope of this proceeding and it is also the subject of current Commission rulemaking. Intervenor object to this rejection citing the Court of Appeals in *Minnesota v. NRC*, 602 F.2d 412 (D.C. Cir. 1979). As pointed out in our Order of March 5, the Commission has initiated rulemaking on this generic issue and the Appeal Board has subsequently held that this topic is not litigable in individual proceedings pending the outcome of the completion of the "waste confidence" rulemaking. *Public Service Electric and Gas Co., et al.* (Salem Nuclear Generating Station, Unit 1), ALAB-650, 14 NRC 43, 68-69 (1981). Our rejection of this contention is reaffirmed and Intervenor's request for certification is denied.

Palmetto Contention 38 (CESG 11) concerns enlargement of the spent fuel pool without an amendment to the construction permit and the associated increase in the source term. Our Order of March 5 rejected these contentions because they were in the nature of legal argument or concerned issues we conditionally admitted elsewhere (Palmetto Contention 16). Intervenor object to this rejection, but provide no specific argument as to why the Board should reconsider its decision. Rejection of these contentions is reaffirmed.

6. ECCS (Palmetto Alliance 19, 45; CSEG 19)

This contention concerns a postulated malfunctioning of the Catawba ECCS caused by "dropping of the neutron shield from its support" and a resulting "blockage of the coolant system flow path." We previously rejected this contention for lack of specificity. The Intervenor object to that ruling and now point more specifically to portions of the Catawba and McGuire records where a "neutron shield" (also called a "lower core barrel") is referred to. However, these references do nothing to clarify the manner in which the postulated accident might occur. We therefore adhere to our earlier ruling.

7. ALARA

Palmetto Contention 20 postulates that occupational exposures will not be as-low-as-reasonably achievable because certain equipment might require extensive repairs and because the FSAR does not adequately consider exposure that might occur. Our Order of March 5, 1982 rejected this contention because it failed to provide any reasonably specific basis for the assertion that 10 CFR 20.1 requirements will not be met. Intervenors object to this rejection but still provide no specific reason why the applicable rules will not be met. We reaffirm our rejection of this contention.

8. Control Room Design (Palmetto 22, 42; CESG 16)

These contentions concern control room design and an interface with human factors, particularly water-level indicators. They were denied in part and admitted conditionally in part in our March 5 Order. Intervenors object to our partial denial of Palmetto 22 and reference certain vaguely identified documents. Finding no new reason to modify our earlier ruling, we decline to do so.

9. ATWS (Palmetto 28)

This matter was previously rejected by the Board on the basis of a recent and controlling Commission statement. Completely ignoring the Commission statement and alluding to matters of which the Commission is already aware, the Intervenors object. The Board's earlier position on this generic issue is reaffirmed.

10. Systems Interaction (Palmetto 29)

This contention voices concern that unrecognized interactions of systems could result in plant conditions that compromise the safety and health of the general public. Our Order of March 5, 1982 rejected this contention because of its vagueness. Intervenors object to this rejection, pleading their lack of technical qualifications to be specific in respect to Catawba. The Board agrees that the general subject is of safety significance, but in the absence of a specific basis for litigation the contention must be disallowed.

11. Risk Evaluation (Palmetto 32, CESG 3)

These contentions concern risk analyses and introduce a concept of "totality of risk" in terms of fatalities arising from apparently simultaneous accidents at the

Catawba and McGuire power stations. The contentions were rejected as not being site-specific to Catawba. The Board considers bringing McGuire into the statement as not affecting the argument. No elaboration has now appeared on the alleged fault in the analysis by the Staff of potential risks to the public, the principal thrust of these contentions. The Board retains its earlier position.

12. *Emergency Planning (Palmetto 35, 37; CESH 8, 10)*

The Intervenor lodge a rather cryptic objection to our rulings on Palmetto Contention 35 (CESG 8). We take it they are referring to our ruling on the second sentence of the contention, which appeared to call for a 30-mile radius for the plume exposure pathway emergency planning zone. We continue to view this as an impermissible attack on the rule establishing a zone radius of "about 10 miles." We are now asked to "certify" this contention for determination by the Commission or Appeal Board.

We are not sure whether this request to "certify" means to send up our ruling for interlocutory appellate review pursuant to 10 CFR 2.751a(d) or to certify the matter to the Commission for determination whether a waiver should be granted, pursuant to 10 CFR 2.758(d). We are doing neither, because neither of the quite different kinds of showings required of the movant have been made by the Intervenor here. See 15 NRC 1754 of the Order of June 30, 1982; 10 CFR 2.758(b).

As to the crisis relocation contention (Palmetto 37, CESH 10), we adhere to our prior ruling. The request for "certification" (referral) is also denied for lack of an appropriate showing.

13. *EMP (Palmetto 41; CESH 15)*

This contention asserts that the design and construction of Catawba does not give appropriate consideration to an electromagnetic pulse (EMP) which might knock out power grids, communications systems, control systems, and other electronic equipment. Our Order of March 5, 1982 disallowed this contention as an impermissible challenge to Commission regulation 10 CFR 50.13. Intervenor object, asserting that an EMP could be caused by the detonation of nuclear weapons short of war, and request certification of the issue to the Appeal Board or Commission. The wording of 10 CFR 50.13 includes ". . . (b) use or deployment of weapons incident to U.S. defense activities. . ." and we remain unconvinced that the contention is outside of this rule. Although we are disallowing this contention as an impermissible challenge to the Commission's rules, the potential disruption of operations at nuclear power stations and all other types of facilities that depend upon sophisticated electronic systems must be viewed as potentially

serious. Because of the pervasive nature of the problem, policies and possible mitigative actions need to be developed on a generic basis rather than piecemeal through litigation in individual licensing actions.

The Commission is aware of the EMP problem and has research under way to better define the nature and magnitude of this issue (SECY-81-641). This research is a prerequisite to the formulation of a Commission policy or rule, should this be necessary.

14. *Embrittlement (Palmetto 44; CESG 18)*

We previously rejected this contention for lack of specificity. Intervenors have included clarifications of this contention in their objection to our ruling such that it now meets specificity standards. It is therefore admitted as clarified. The clarified contention was filed in March 1982, some four months late under 10 CFR 2.714(a)(3). However, we do not believe that any party can claim prejudice from the Board's now considering the clarified contention on its merits, in view of subsequent slippages of more than four months in construction and hearing document schedules. We caution the Intervenors, however, that any contentions filed hereafter and not based on new information must be accompanied by a showing with reference to the five factors in 10 CFR 2.714(a)(1).

15. *Releases to Lake Wylie (Palmetto 46; CESG 20)*

This contention is concerned with the accidental release of "radioactivity" to Lake Wylie. Our Order of March 5, 1982 disallowed the contention because of vagueness and thus not meeting the requirements of 10 CFR 2.714(b). Intervenors object to this rejection asserting that ". . . it is appropriate to inquire into potential Catawba equipment design to deal with a [Oconee-like] non-planned release." Since Sections 3.5, 5.2, 11.2 and 15.7 of the FSAR discuss the equipment design of the radwaste system at issue, it is incumbent upon intervenors to base their contention upon specific aspects of the system which they think will not work. Intervenors have failed to be specific and the contention cannot be admitted.

16. *Liability of New Owners*

We adhere to our earlier ruling on CESG Contention 22 (Palmetto 48). In addition, this contention must now be disallowed on the independent ground of the recently-adopted rule barring financial qualifications from operating license proceedings.

17. Documents

The Intervenor asks us to require the Applicants to serve on them complete copies of the Application, Environmental Report, Final Safety Analysis Report and Technical Specifications. We are denying this request because of the expense involved in supplying these voluminous documents to each Intervenor. These documents are available to Intervenor at the Public Document Room in Rock Hill. We understand they are also available in Charlotte at the Applicants' offices. We are exploring the possibility of opening another public document room in Columbia. Such a room would alleviate the practical problem for Palmetto.

C. Access to the Catawba Security Plan

Although we conditionally admitted Palmetto's Contention 23 concerning the Catawba security plan in our Order of March 5, we stated that "we would condition a disclosure order on Palmetto's having obtained the services of a qualified security plan expert." We also indicated that access to the plan would only be granted subject to some form of protective order restricting disclosure of safeguards information. In response to questions subsequently posed to them in our Order of April 13, Palmetto has informed us, among other things, that they do not have and do not intend to obtain a security plan expert in the generally accepted sense of that term. Furthermore, Palmetto has expressed an unwillingness to submit to any form of protective order that will restrict their freedom to disclose safeguards information in any manner they see fit. Palmetto's Response to Board Questions at 3-5.

The Staff and the Applicants have filed pleadings in opposition to Palmetto's submission, arguing that both expert assistance and a protective order are prerequisites to access to a security plan. We agree with the Staff and the Applicants on those points, substantially for the reasons they advance. We also believe that these developments call for the dismissal of Contention 23 because, in our view, access to the Catawba security plan is necessary in order to develop specific contentions in this case. A few additional comments on this subject are appropriate.

Palmetto proffers two former Duke Power Co. security employees at the McGuire facility as expert witnesses. There is no showing that these people are qualified as security experts except as would be derived from their prior employment. The burden is on the sponsor to demonstrate his witnesses' credentials. *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-410, 5 NRC 1398, 1405 (1977). An expert in nuclear power plant security should possess extensive training or experience in that or closely related fields. Such a person should be able to assess overall plant security with an appreciation for its interrelated aspects. There is no basis for assuming that a former security employee *ipso facto* has the necessary background. We cannot accept Palmetto's

unsupported assertion that “more formal expertise” in this area is only available to the owners of nuclear power plants. As the Applicants point out, there are indications that intervenors in other cases have been able to secure the services of security experts. *See Applicants’ Response* at 23, n.17. At the very least, we would have required proof of diligent efforts to secure expert services.

As we read Palmetto’s response, they decline to be bound by any restrictions on subsequent disclosure of safeguards information. The Commission’s rules (10 CFR 2.744(e)) clearly authorize and may well require imposition of such restrictions. In any case, this Board would consider them necessary here. We note Palmetto’s alternative suggestion that they be given a “sanitized” version of the Catawba security plan without any restrictions on disclosure. The concept of a sanitized plan involves withholding from an intervenor sensitive parts of a plan that he does not need to litigate his contentions. But as the Staff correctly points out, the resulting sanitized plan, minus those parts, is still subject to restrictions on disclosure. Given Palmetto’s stated aversion to such restrictions, the sanitized plan approach can serve no purpose here.

In sum, an Intervenor must have a qualified expert and must submit to a protective order if he wishes to pursue a security plan contention. Palmetto has failed to meet these preconditions. Accordingly, Palmetto Contention 23 is dismissed because it is impermissibly vague and because Palmetto has not met reasonable contentions that would enable it to develop specific contentions.

Palmetto makes the alternative request that this Board “pursue this security issue pursuant to its general *sua sponte* authority.” Palmetto Response at 5-6. In that connection, they also ask the Board for an order enjoining the Applicants from acts of “harassment, intimidation or reprisal” against the former security employees as a result of their cooperation in this matter.

The Board reserves for the present the question whether it will take any further action on the seemingly serious allegations at page 5 of Palmetto’s response. As to the request for an injunction, we need not now explore the scope of our authority (if any) in that regard. The Applicants have categorically denied those allegations. Injunctive and similar relief does not issue without a predicate of convincing proof. We presently have no proof of Palmetto’s allegations.

D. Revision of Condition on CMEC Contention

By letter dated June 15, 1982, Counsel for the Staff brought to our attention an inaccurate statement made in a condition attached to our admission of CMEC Contentions 1-4 in the March 5 Order (LBP-82-16, 15 NRC 575-76). The inaccuracy arises from the fact that the Staff’s review of the methodology for calculating the source term of radioactive emissions at Catawba will be in the Staff Safety Evaluation, not the Staff’s environmental impact statement. Accordingly,

the last two sentences on p. 575 of Vol. 15, NRC Issuances are amended to read as follows:

Should these contentions go to hearing, additional information concerning them may be contained in the Staff's safety evaluation report and impact statement. Accordingly, CMEC shall review the Staff's safety evaluation report and draft and final environmental impact statements promptly after they become available and revise these contentions, as appropriate, in light of those documents.

E. Discovery

The Board's Order of May 25, 1982, temporarily suspended discovery on specified contentions pending our rulings on requests for reconsideration, motions for referral, and related matters. That suspension was based upon the Staff's extension of its expected issuance dates for certain documents, particularly the six month extension with respect to the Safety Evaluation Report. The SER in this case is now scheduled for issuance in February 1983. Hearings normally begin about three or four months after the SER issues. However, in light of the information supplied by the Applicants in Mr. Carr's letter of May 10, 1982 to the Board — particularly an initial fuel loading date of October 1984 for Unit 1 — it appears that the hearing in this case could begin somewhat later than the Staff's SER issuance date would normally indicate, if necessary to allow adequate time for discovery, without the risk of this becoming an "impacted" proceeding.

In these circumstances, we solicited the views of the parties on a draft order that would have suspended all mandatory discovery in this case until after the status of the contentions became more clearly fixed by Appeal Board rulings on key issues. The Applicants and CESG (informally by telephone call from Mr. Riley to the Chairman) expressed no objection to that approach. The staff supported suspension except with respect to Palmetto Contentions 8 and 16, if the Board decides to admit them. The Staff properly points out that those contentions would not be affected by the anticipated Appeal Board rulings. The Board agrees with the Staff's reasons for allowing discovery to proceed on those contentions, and notes that the same considerations apply to Palmetto Contention 27. With the foregoing considerations as background the Board orders that:

(1) All mandatory discovery in this proceeding is suspended pending further order of the Board except with respect to Palmetto Contentions 8, 16 and 27. This suspension applies to all pending matters in the discovery process, including, for example, motions to compel, motions for protective order, and the like.

(2) This suspension of discovery is not to jeopardize the right of all parties to an adequate opportunity for discovery in this proceeding.

The Board intends to modify or rescind this suspension order promptly after the Appeal Board rules on the questions we are referring to it, or after the Appeal Board declines referral.

The Board encourages the continuation of informal voluntary discovery among the parties while this suspension of mandatory discovery is in effect.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**James L. Kelley, Chairman
ADMINISTRATIVE JUDGE**

**Dated at Bethesda, Maryland,
this 8th day of July, 1982.**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Peter B. Bloch, Chairman
Dr. Oscar H. Paris
Mr. Frederick J. Shon**

In the Matter of

**Docket No. 50-155-OLA
(Spent Fuel Pool Amendment)**

**CONSUMERS POWER COMPANY
(Big Rock Point Plant)**

July 8, 1982

The Licensing Board affirms, over objections of the NRC Staff, a phased schedule for the filing of findings of fact and conclusions of law subsequent to an evidentiary hearing. Under the schedule, all parties are required to make simultaneous filings of findings of fact and conclusions of law on each of the contentions and all parties have simultaneous rights of reply.

**RULES OF PRACTICE: SCHEDULING FINDINGS OF FACT AND
CONCLUSIONS OF LAW**

A Board may require phased findings of fact and conclusions of law subsequent to an evidentiary hearing in order to expedite the decision process by permitting the Board to begin analyzing the record efficiently. Under a phased schedule, early findings may be required prior to the 30 days allowed for applicants under the procedural regulations. The Board may also require simultaneous filing of these phased findings, in order to expedite the proceeding and to encourage staff to develop an independent position.

MEMORANDUM
(Staff Motion to Reconsider Schedule for Findings)

At the conclusion of the evidentiary hearing conducted in early June, the Board adopted a schedule for the filing of findings of fact. Staff has asked us to reconsider the schedule, which alters the ordinary regulatory schedule for filing findings of fact, in which applicant has 30 days after the record is closed, intervenors have 40 days and the staff has 50 days, followed by five days for applicant to reply. 10 CFR §2.754(a).

Since the hearing concluded on June 12 and the record was closed on issues fully considered at the hearing, the schedule we are asked to reconsider permits us to begin writing findings well before the customary 55 days elapse. One reason for the expedition is that staff's traditional 10 days of grace is deleted. The adopted schedule follows:

Contention	Findings	Replies
Emergency planning pamphlet	6/25/82	7/08/82
EIA	7/16/82	8/05/82
Cask Drop	7/16/82	8/05/82
Administrative Controls (Crane)	7/30/82	8/19/82
Other Emergency Planning Issues	7/30/82	8/19/82
TMI Issues	8/16/82	9/07/82

Staff's principal reason for opposing the schedule is that it calls for simultaneous findings of fact, contrary to a position taken in a portion of the statement of considerations for §2.754(a). 37 *Fed. Reg.* 15127 (July 18, 1972). That statement of considerations supports the decision in the rule to permit staff to consider the position of other parties before finalizing its position.

Although Christa-Maria *et al.* have supported staff's position, we are not convinced of its merit. We accept applicant's view that §2.754 permits the Board to vary its regularly provided procedures. Our reasons for varying the procedure were stated on the record, and include concern for expedition and the desirability of obtaining an independent statement of staff views. Tr. 2605-2608. Furthermore, the schedule for replies provides the staff the opportunity to review other parties' filings and revise its views, if necessary.

We believe that the phased schedule for simultaneous filings will expedite our decision and that it establishes a fair schedule that allows each party an equal opportunity to influence the outcome. *See* Tr. 2605-08. There is no persuasive reason to disturb the adopted schedule, which we laboriously crafted, and to construct a new schedule. Instead, it will be fair and efficient for us to adhere to the course we adopted.

ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 8th day of July, 1982,

ORDERED

The Nuclear Regulatory Commission Staff's Motion for Reconsideration of Order Concerning Schedule for Filing Findings of Fact and Conclusions of Law, filed on June 28, 1982, is denied.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE**

Bethesda, Maryland

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**John H. Frye, III, Chairman
Dr. Martin J. Steindler
Dr. Robert L. Holton**

In the Matter of

Docket No. 50-10-OLA

**COMMONWEALTH EDISON COMPANY
(Dresden Nuclear Power Station,
Unit No. 1)**

July 12, 1982

Pursuant to a Memorandum and Order of the Commission directing its establishment (CLI-81-25, 14 NRC 616 (1981)), the Licensing Board rules that one individual and two organizations have standing to intervene in this proceeding concerned with *chemical decontamination of Dresden Unit 1* but, because it finds that none of the contentions advanced by Petitioners are acceptable under 10 CFR §2.714 and CLI-81-25, the Board denies the petitions.

RULES OF PRACTICE: STANDING TO INTERVENE

An organization petitioning to intervene as a representative of its members must demonstrate that it has at least one member with personal standing who has authorized the organization to represent his or her interest.

RULES OF PRACTICE: STANDING TO INTERVENE

Purely academic interest in a problem is not an interest encompassed by 10 CFR §2.714. In order to satisfy 10 CFR §2.714, an injury in fact must be alleged.

RULES OF PRACTICE: ADMISSIBILITY OF CONTENTIONS

In order to be admitted for litigation, a contention must inform the Board and the parties of the matters sought to be litigated. Particularly where substantial technical information is available indicating the bases for the applicant's proposal and the Staff's position, Petitioners' contentions must indicate the specific respects in which they quarrel with that information.

MEMORANDUM AND ORDER (Ruling on Amended Petition)

This matter concerns a request by Licensee to chemically decontaminate the interior surfaces of Dresden Unit 1's primary coolant system. This request has been pending for some time.

On September 28, 1981, the Commission issued a Memorandum and Order (CLI-81-25, 14 NRC 616) in response to requests for hearing in this matter filed by Citizens for a Better Environment, Prairie Alliance, Illinois Safe Energy Alliance, Kay Drey, Bridget Rorem, and Marilyn Shineflug. This Memorandum and Order directed that an Atomic Safety and Licensing Board be appointed to rule on the requests and laid down certain guidelines pertinent to the requests and any hearing which might result from them.

Pursuant to the Commission's Order, this Board was established. Pursuant to this Board's Order, amended petitions were filed and responses received from Licensee and Staff.

While the Board had this matter under consideration, on March 29, 1982, Licensee informed the Board that, while it definitely plans to go forward with chemical decontamination of Dresden Unit 1, it appeared that it could not do so prior to June 1, 1983, and did not expect to do so before 1984. Consequently we requested Petitioner's comments on the impact of this information on their petition and contentions in general and in particular on those portions of proposed Contention A which address the potential problem of an extended lay-up of the reactor between decontamination and return to service.

Petitioners responded to this request, albeit two weeks late, and at the same time submitted a "Second Amended Petition and Initial Contentions." This Amended Petition is specifically authorized by 10 CFR §2.714(a)(3). Licensee and Staff have responded to both documents on the merits. We treat the Second Amended Petition (hereinafter Petition or Amended Petition) as superceding the Amended Petition and confine our ruling to it as amplified by the Petitioners' response to the Licensee's deferral of decontamination.

Before considering the amended petition, it is important to note that the license amendment sought by Licensee has been issued. In its Memorandum and Order,

the Commission stated “. . . if the Director [of Nuclear Reactor Regulation] determines that the proposed licensing modifications present ‘no significant hazards consideration,’ then the decontamination may be initiated prior to the conclusion of any hearing,” (14 NRC at 623). On December 18, 1981, the Director made that determination and issued Amendment No. 35 authorizing the decontamination, along with a Safety Evaluation Report covering the amendment.

Standing

In its September Memorandum and Order, the Commission required each petitioner to separately establish standing to participate. In their Petition, Petitioners have addressed this issue separately for each Petitioner, and have addressed some of the objections of Licensee and Staff on this point.

The organizations petitioning do so as representatives of their members residing near the Dresden Station. Citizens for a Better Environment (CBE) petitions on behalf of two of its members, Kevin Greene and Bridget Rorem, who reside 25 and 15 miles, respectively, from the station. Prairie Alliance (PA) petitions on behalf of one of its members, the same Bridget Rorem. Both members have furnished the necessary authorization to these organizations. The Illinois Safe Energy Alliance, a coalition of 19 affiliate organizations with over 300 members, petitions on behalf of those members residing near the station. However, no such members are identified and no authorizations furnished. Thus the Alliance has not complied with the requirements laid down in *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-535, 9 NRC 377 (1979).

Additionally, CBE seeks to intervene on behalf of its members who may be affected by possible decontamination of other reactors in the future, and Kay Drey supports her standing on the ground that she may be adversely affected by decontamination of other nuclear stations. These allegations raise matters outside the scope of this proceeding and consequently cannot furnish a basis for standing. *Cf. Consolidated Edison Company of New York, Inc.* (Indian Point, Units 1, 2 & 3), ALAB-304, 3 NRC 1 (1976). We agree with the Staff that purely academic interests are not encompassed by 10 CFR §2.714(a). These concerns must await a future case affecting a specific interest of these petitioners. They are, of course, also free at any time to raise general concerns under 10 CFR §2.802.

Marilyn Shineflug seeks to support her standing on her status as a citizen of Illinois. She furnishes no information with respect to her residence or other activities in the vicinity of the Dresden station, asserting merely that her own, her family's and her descendants' health, safety and property will be adversely affected by any negative environmental impact resulting from the decontamination. These allegations are insufficient to support standing. As noted in the discussion of ISEA's petition, acceptance of such allegations in support of standing would run counter to the rationale of *Allens Creek, supra*.

Bridget Rorem, however, has clearly satisfied 10 CFR §2.714(a) by alleging that she resides within 15 miles of the Dresden station and that her own, her family's and her descendants' health, safety, and property will be adversely affected by any negative environmental impact of the decontamination. Her standing, as well as that of Kevin Greene, support the representational standing of CBE and PA.

Contentions

Proposed Contention A asserts:

- A. There has not been an adequate evaluation of the impact of the proposed decontamination if Dresden 1 is to be restarted in 1986 or later.
 1. It has not been demonstrated that the extended period between decontamination and startup will not increase the likelihood of increased corrosion of bolts and valves in the core support system or of metal in the vessel clad or any creviced areas or pockets.
 2. There has been no demonstration that the final inspection criteria of the materials in the reactor coolant pressure boundary will be adequate to insure the safe resumption of operation.
 3. It has not been demonstrated that the extended lay-up after decontamination will not exacerbate any stresses or cracks already existing and/or induced by the decontamination.
 4. There has been no demonstration that the decontamination will neither induce nor increase the likelihood of stresses or cracks developing in materials embrittled by more than 15 years of exposure to radiation; evaluations of potential embrittlement problems has [sic] been ordered by the NRC for other reactors.
 5. There has been no demonstration that any alternatives to decontamination are not preferable to the proposed method in light of the decrease in the remaining years of operation if the unit is not restarted until 1986 (the operating permit expires in 1996).
 6. There has been no demonstration that the cost of other actions and modifications necessary for restarting the unit will be sufficiently minimal that the total cost for restarting the reactor would be less than the "break even renovation cost" of \$105 million (Final EIS p. 8-6).
 7. There has been no demonstration that the hazards analysis for the decontamination and post-decontamination review will be adequate for resumption of operation in light of TMI-2 and the current state of knowledge.

In their response to Licensee's deferral of decontamination, Petitioners do little to elaborate on this Contention, which remains unchanged from their original

version despite the subsequent issuance of the SER which devotes considerable discussion to the problem posed by an extended lay-up between decontamination and restart. The response basically reiterates Petitioner's concern with regard to the lay-up period and asserts a concern that too long a period prior to decontamination could also be detrimental.

Licensee opposes Contentions A.1, A.2, A.3, A.6, and A.7 on the ground that they raise matters relevant only to operation. Licensee correctly points out that CLI-81-25 limited this proceeding to matters arising from decontamination.

Additionally, Licensee objects on the following grounds:

A.1 — No basis is given for the assertion that there will be an extended period between decontamination and restart.

A.2 — No basis or specificity is furnished for the assertion that the final inspection will not be adequate.

A.3 and A.4 — No basis is given to support the assertion that stresses or cracks will be induced or exacerbated by an extended lay-up after decontamination, or that decontamination itself will induce or exacerbate stresses or cracks, or that stresses or cracks exist. Licensee also objects to the fact that Contention A.3 would require proof of a negative.

A.5 — No authority exists to consider alternatives absent a determination under NEPA that decontamination will have significant effect on the environment or involves unresolved conflicts concerning uses of available resources. Further, no contention calls for such NEPA determinations.

A.6 — Economic costs are irrelevant absent a showing that an environmentally preferable alternative exists.

A.7 — No basis or specificity is given.

Staff basically agrees with the Licensee's specific objections to Contentions A.2 and A.7. Staff views Contentions A.5 and A.6 as attempts to litigate matters considered in the FES (NUREG-0686, October 1980), correctly noting that the Commission in CLI-81-25 excluded these matters from this proceeding. As to Contention A.6, Staff agrees with Licensee that it also improperly seeks to litigate matters related to restart as well as economic matters without the required environmental showing.

Staff differs with Licensee with respect to Contentions A.1, A.3, and A.4. These the Staff views as presenting acceptable subjects for hearing.

These Contentions do identify problem areas which the Staff has pointed out in its December 18 SER. Contentions A.1, A.3, and A.4 raise in general terms concerns about which a good deal of information was available to Petitioners. For instance, in a letter to NRR dated May 5, 1980, Brookhaven National Laboratory (BNL) commented on a Licensee submittal of March, 1980, and raised concerns regarding an extended lay-up period. BNL stated that should an acid residue of the solvent used in decontamination remain in crevices in the presence of such inorganic anions as sulfates, sulfites or chlorides, a possibility would exist for

continued crevice corrosion. BNL pointed to the difficulty of removing the residual acid from tight crevices by rinsing. BNL also expressed concern that activated crevices in stressed piping could continue to propagate during a long shutdown. BNL recommended a thorough rinsing procedure, coupled with either heating the reactor vessel and piping, or, if heating were not feasible, a neutralizing treatment.

In a letter of September 3, 1980, BNL commented further on the cleaning and rinsing procedure and indicated that its concerns had been substantially reduced. Both these letters are available in the local Public Document Room for the facility.

Following submission of these Contentions, the SER for the decontamination was issued. It contains an extensive discussion of the problem posed by a lay-up period, and relies on the BNL letters for the conclusion that the proposed rinsing procedure will prevent any corrosion or crack propagation which might otherwise occur following decontamination. Approximately five months later Petitioners filed their Amended Petitions which restated the Contentions without substantive change.

In these circumstances, we believe more is required to state acceptable Contentions. These Contentions do no more than point to the existence of a problem which Licensee and Staff have recognized and have resolved to their own satisfaction. Petitioners assert that there has been an inadequate evaluation of the decontamination, assuming an extended lay-up, because that lay-up will result in increased corrosion and exacerbation of cracks. They do not address the proposed solution to these identified problems. They do not give notice to the Board or the parties of the respects in which Petitioners regard the proposed solution as inadequate. They do not even say that Petitioners regard the proposed solution inadequate. As they stand, the Contentions simply do not place any facts in issue. They are more conclusions than they are contentions. Because they do not give notice of facts which Petitioners desire to litigate, they fail to be specific enough to satisfy the requirements of 10 CFR §2.714.

The remaining portions of Contention A are denied for the following reasons:

A.2 — The term "final inspection criteria" lacks the necessary specificity to advise the Licensee and Staff of the matter sought to be litigated. Additionally, this Contention appears to be aimed at pre-operational, rather than post-decontamination, inspection. As such, it is outside the scope of this proceeding.

A.5 — The Board agrees with Licensee that, absent an appropriate contention and determination by this Board under NEPA, this Contention need not be considered.

A.6 — The Board agrees with the Staff's conclusion that this Contention need not be litigated because it relates to matters covered in the FES and is related to restart rather than decontamination.

A.7 — The Board agrees with the Staff's conclusion that this Contention need not be litigated. The Contention does not indicate what Petitioners seek to litigate and hence is too vague.

Contention B states:

B. There has not been an adequate evaluation of the impact of the proposed decontamination if Dresden Unit 1 will never be restarted.

1. It has not been demonstrated that the proposed method of decontamination is the preferable method or if it is necessary based on environmental, health and cost considerations if the reactor is not restarted.
2. It has not been demonstrated that decontamination is unrelated to decommissioning of the reactor.
3. If the decontamination is not related to startup or decommissioning then the applicant has not adequately demonstrated a need for the decontamination and for imposing any potential environmental and health impacts of the decontamination on the public.

Licensee objects to Contention B.1 for the same reasons given in opposition to A.5, *i.e.*, that it requests a consideration of alternatives without a showing under NEPA that such is necessary. Licensee objects to Contention B.2 because it does not state a contention and, in any event, is outside the scope of the proceeding as defined by the Commission. Licensee objects to Contention B.3 because it calls for a justification for the project under NEPA without a showing that NEPA requires this consideration.

Staff objects to Contention B *in toto* as calling for litigation of matters contained in the Final Environmental Statement, noting correctly that the Commission expressly excluded these matters from the proceeding in CLI-81-25.

In their Amended Petition, Petitioners have added a reference in this Contention to an article entitled "The Environmental Biogeochemistry of Chelating Agents and Recommendations for the Disposal of Chelated Radioactive Wastes," 2 Nuclear and Chemical Waste Management 183-196 (1981). The article is the work of Jeffrey L. Means and Carl A. Alexander of Battelle Columbus Laboratories. Petitioners do not indicate why the reference is added or what portions of the article they deem relevant to this Contention. The abstract of the article indicates that, if it is relevant, it is relevant to Contention F, not Contention B.

In these circumstances, the reference does nothing to aid Contention B. While the inclusion of such references in Contentions has the potential to benefit the process by furnishing the details of Petitioners' position, mere reference to an article which on its face appears irrelevant does not accomplish this. At the least, the reference should specify the portions of the material relied on; preferably it should include an explanation of Petitioners' position on the relevance of the referenced material. (*See Tennessee Valley Authority* (Browns Ferry Nuclear Plant, Units 1 and 2), LBP-76-10, 3 NRC 209 at 216 (1976).)

The Board believes that before any part of this Contention could be accepted, it would be necessary to find that, under NEPA, the decontamination constituted a major Federal action significantly affecting the human environment. Contention B presupposes the need for a cost-benefit balance and a consideration of alternatives under NEPA. These requirements do not come into play absent finding referred to above. Consequently the Board agrees with Licensee that a prerequisite to this Contention is the successful prosecution of a contention asserting the applicability of NEPA.

Moreover, in light of the Commission's determination not to permit challenges to the FES in this proceeding, coupled with their recognition that ". . . the staff has concluded that the decontamination project will have no significant impact on the human environment . . ." (CLI-81-25, 14 NRC 625), it is difficult to conceive of a situation in which such a contention could be admitted in this proceeding.

Additionally, the Board, like Licensee, is perplexed by the impact of Contention B.2. It appears merely to be a statement, rather than a contention. To the extent that it raises the possibility that Licensee will not restart this reactor, it falls under NEPA and is also governed by the above reasoning.

Contention C states:

- C. There was no adequate demonstration that the choice of decontamination procedure both specifically and as a general alternative was not simply a rationalization as was suggested by the Advisory Committee on Reactor Safeguards on October 8, 1980.

Licensee objects on the grounds that, first, this Contention again raises NEPA considerations in the absence of a finding that NEPA is applicable; second, the Contention is overly vague; and third, the Contention impermissibly challenges the Staff's FES. Staff finds this Contention overly vague, and perhaps constituting, under one possible interpretation, an impermissible challenge to the FES.

The Board agrees that the Contention is too vague to be admitted. To the extent that it seeks a consideration of alternatives, it must be denied for the same reasons as Contention B.

Contention D states:

- D. The proposed decontamination is a novel procedure for a commercial reactor and thus no assurance of safety has been demonstrated.

Licensee and Staff find this Contention overly vague and lacking basis. The Board agrees. The Contention wholly fails to indicate what is sought to be litigated.

Contention E states:

- E. Neither the Board nor the public can properly evaluate the impact of the decontamination without more detailed information on the nature of the solvent, NS-1.

Licensee and Staff find this Contention overly vague. While the Board agrees that this Contention is vague, it must be borne in mind that the composition of the

solvent, NS-1, is proprietary. Consequently, Petitioners obviously have been hampered in their ability to state an acceptable Contention. Nevertheless, information with regard to the use and properties of the solvent is detailed in the Staff's SER, and has been available in the local public document room in correspondence dating back to 1974. Consequently the Board is of the opinion that Petitioners should have furnished more information with regard to the deficiencies they perceive in the information available and why those deficiencies inhibit a proper evaluation of the decontamination. This contention is denied.

Contention F states:

- F. The applicant and NRC staff have not properly evaluated the potential impact of the waste generated by the decontamination.
 - 1. There has been no adequate evaluation of the potential for migration of chelated radionuclides, even in a dry environment, from waste temporarily trapped in a polymer matrix.
 - 2. The applicant has not demonstrated that there will not be more migration from the chelated waste than other radioactive waste disposed of in the Beatty or Hanford sites.
 - 3. The applicant has not properly evaluated the potential for migration of chelated radionuclides following the eventual degradation of the polymer matrix which will occur after burial.
 - 4. The applicant has not properly evaluated the environmental advantages to be derived from deactivation of the chelate complex in case of transportation accidents, leaks on site or leakage from the drums either before or after burial.
 - 5. There was inadequate assurance that the disposal sites will be able to accept all the waste from this and/or other decontaminations employing this procedure and *still* meet the disposal criteria described in the EIS.

Licensee asserts that because none of the individual petitioners or the members of the organizations petitioning reside close to the proposed disposal sites, they have not demonstrated that they will suffer injury from the disposal of the wastes resulting from the decontamination. Licensee believes that consequently their participation should not extend to the waste disposal issue, citing 10 CFR §2.714(f), *Sierra Club v. Morton*, 405 U.S. 727 (1972), and *Allied General Nuclear Services* (Barnwell Fuel Receiving and Storage Station), ALAB-328, 5 NRC 420 (1976). Staff and Petitioners do not address this proposition.

The Board has found that Bridget Rorem and Kevin Greene have standing to participate in this proceeding based upon their residence close to the reactor, and that based upon the membership of either one or both of these persons, both CBE and Prairie Alliance have standing to participate in this proceeding as representatives of their members. None of these parties, however, has made any showing as

to how their respective interests would be affected by the consequences of disposal of the wastes generated by the decontamination.

This Board has found no NRC precedent specifically addressing the question of whether a petitioner who has standing in a proceeding based on residence close to a reactor also has the necessary standing to raise questions relative to the consequences to distant sites of the storage of waste produced during the decontamination of the reactor.

We note that the NRC has allowed consideration of issues relating to uranium mines located considerable distances from nuclear plants applying for licenses (see, e.g., *Philadelphia Electric Co.* (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-640, 13 NRC 487 (1981); *Pennsylvania Power and Light Co.* (Susquehanna Steam Electric Station, Units 1 and 2), LBP-79-6, 9 NRC 191, 297-98 (1979). It does not appear, however, that those cases considered whether the intervenors raising those issues had shown injury from that aspect of operation.

While we entertain some question whether any of the Petitioners have established standing to litigate issues related to the disposal of decontamination wastes at distant sites, this point was never addressed by Staff and Petitioners (although both had the opportunity to do so) and was only minimally briefed by Licensee in its response to the Petitioners' Amended Petition. Consequently, we do not decide this point.

Another difficulty presented by Contention F is whether it seeks to litigate the Staff's FES. In CLI-81-25, the Commission stated ". . . that the public interest does not require a hearing on the Final Environmental Statement." (14 NRC at 625.) Neither Staff nor Licensee assert this objection. However, we believe a close question exists with regard to the scope of the Commission's ruling (does it preclude litigation of matters covered in the FES only, or also of attempts to assert that matters should have been covered and were not), and the specifics of this Contention.

With respect to the latter problem, we are confronted with an assertion that "[t]he applicant and NRC Staff have not properly evaluated the potential impact of the waste generated by the decontamination." In five following paragraphs, it is asserted that there has been inadequate evaluation of the potential for migration of chelated radionuclides, no demonstration that these wastes will not migrate more than other wastes, no proper evaluation of potential migration following degradation of the polymer matrix, inadequate evaluation of the advantages of deactivation of the chelate complex, and inadequate assurance that the disposal sites can handle the wastes and meet the disposal criteria of the FES.

None of this tells the parties or the Board in what specific ways the evaluation has been improper. We are left to speculate with what specific aspects of the evaluation Petitioners quarrel. In what respects has the evaluation of the potential for migration of chelated radionuclides been inadequate? Why should the Licensee demonstrate that its wastes will not migrate more than other wastes? What's wrong

with the Licensee's evaluation of the potential for migration of chelated radionuclides following degradation of the polymer matrix, and its evaluation of the advantages of deactivation of the chelate complex? Why is there inadequate assurance that the disposal sites can accept the wastes and meet the disposal criteria, and what specific criteria in the FES are involved? The Contention poses these questions, it does not answer them. We are thus severely handicapped in judging not only whether the Contention improperly places the FES in issue, but, leaving the FES aside, precisely what is sought to be litigated.

Petitioners have an obligation to answer such questions if their contentions are to be accepted for litigation. Section 2.714 of the Commission's regulations requires no less. Before initiating costly and time-consuming litigation, the Commission is entitled to know what is to be litigated.

The amount of information available to Petitioners and the length of time it has been available make it easy for the Petitioners to have supplied the necessary detail. CLI-81-25 was published September 28, 1981. The FES has been available since October, 1980, and the SER since December, 1981. Additionally, the data evaluated in the SER predates 1975 and has been available in the local public document room. Nonetheless, neither the amended petition of November, 1981, nor the second amended petition of May, 1982, make reference to this material in order to supply the necessary detail. In the second amended petition, reference in Contention F is made to the Petitioners' response to the Licensee's deferral of decontamination. No elaboration is given, and we suspect that in fact Petitioners intended to refer to the article on chelated wastes discussed above. If so, as we indicated, more was required than the bare reference itself.

In these circumstances we must conclude that Petitioners have failed to state this Contention with sufficient specificity to comply with §2.714.

Contention G asserts:

G. The EIS is deficient in that it does not adequately evaluate the potential impacts from the proposed decontamination.

Licensee and Staff believe that this Contention seeks to litigate matters discussed in the FES and correctly point out that the Commission precluded this. The Board agrees. The Contention is denied.

Two points raised in Petitioners' response to the Licensee's deferral of decontamination remain to be addressed. In their paragraph numbered '1.' on page 1, Petitioners call into question Licensee's financial qualifications to conduct the decontamination, as well as its "plans or predictions" for future nuclear generating capacity. While we are unsure whether this is meant to be a contention, we note that if so, it improperly seeks to introduce financial qualification and "need for power" issues into the proceeding. As the Staff points out, the Commission's recently promulgated rule: "Elimination of Review of Financial Qualifications of Electric Utilities in Licensing Hearings for Nuclear Power Plants," 47 *Fed. Reg.* 13750, March 31, 1982, removes the issue of financial qualifications from

construction permit and operating license proceedings for power reactors. While license amendment proceedings are not specifically included in the rule (the issue typically was not raised in these proceedings), it would be anomalous to take the issue up in this proceeding. The Commission's rationale for eliminating the requirement in construction permit and operating license proceedings is no less applicable to license amendment proceedings.

In *Consumers Power Company* (Big Rock Point Nuclear Plant), ALAB-636, 13 NRC 312 (1981), the Appeal Board held that it was not necessary to consider the continued plant operation which might be permitted by the grant of a license amendment. We believe this rationale is applicable to the "need for power" issue to the extent Petitioners seek to raise it here.

The second point is Petitioners' request that the Board seek Commission clarification as to the admissibility of questions relating to the return to service of Dresden Unit 1. This is set forth in the paragraph numbered '4' on page 2 of Petitioners' response.

The Commission's intent to exclude restart matters from this proceeding is clearly set forth in CLI-81-25, and Petitioners have not made a showing sufficient to justify the certification of this question to the Commission. Consequently the request is denied.

Because we have found that none of the Contentions advanced by the Petitioners meet the standards of CLI-81-25 and §2.714, we find it unnecessary to address the question of discretionary intervention. We read the Commission's decision on this matter, *Portland General Electric Company, et al.* (Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610 (1976), as permitting Boards to admit, on a discretionary basis, petitioners who do not meet the Commission's requirements for standing. We do not believe the Commission intended that a petitioner without a valid contention should be entitled to discretionary intervention, nor do we believe that a petitioner could qualify for discretionary intervention without a contention worthy of exploration in an adjudication.

ORDER

In consideration of the foregoing, it is this 12th day of July, 1982,

ORDERED

1. Petitioner Bridget Rorem has standing to intervene based on her residence;
2. Petitioner Citizens for a Better Environment has standing to intervene as a representative of its members, Kevin Greene and Bridget Rorem;
3. Petitioner Prairie Alliance has standing to intervene as a representative of its member, Bridget Rorem;
4. Petitioners Kay Drey, Marilyn Shineflug, and Illinois Safe Energy Alliance

lack standing to intervene; and

5. None of the Contentions advanced by Petitioners satisfy the requirements of CLI-81-25 and 10 CFR §2.714.

It is further ORDERED that the Petition is hereby DENIED.

Pursuant to 10 CFR §2.714a, this Order may be appealed to the Atomic Safety and Licensing Appeal Board by the filing of a notice of appeal and accompanying brief within ten days after service of this Order. Any other party may file a brief in support of or opposition to the appeal within ten days after service of the appeal.

Judges Steindler and Holton concur but were unavailable to sign this Memorandum and Order.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

John H. Frye, III, Chairman
ADMINISTRATIVE JUDGE

Bethesda, Maryland,
July 12, 1982.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Dr. Jerry R. Kline
Mr. Frederick J. Shon

In the Matter of

Docket Nos. 50-440-OL
50-441-OL

CLEVELAND ELECTRIC ILLUMINATING
COMPANY, *et al.*

(Perry Nuclear Power Plant,
Units 1 & 2)

July 12, 1982

The Board admits late-filed contentions on psychological stress, the degradation of electrical wiring from radiation-induced embrittlement of electrical insulation, and the impropriety of considering local economic effects as benefits for purposes of the Draft Environmental Statement, but requires intervenors to further particularize two of the contentions prior to hearing.

The Board refuses to admit a late-filed contention that the plant's closed-cycle cooling system should be replaced by a radial well system, such as has been employed at Grand Gulf Nuclear Station, in order to reduce the number of fish, fish eggs and larvae destroyed through impingement and entrainment. The Board also refuses to admit a contention that the environmental analysis must consider the possible use of nuclear fuel for nuclear weapons, should the government subsequently decide to permit the use of laser isotope separation techniques to accomplish this purpose.

In addition, the Board rules that the decision in *Natural Resources Defense Council v. NRC*, Civil Action No. 74-1586 (April 27, 1982), which has not been accompanied by a mandate, does not provide grounds for reconsidering an earlier ruling excluding a contention on the safe disposal and storage of radioactive materials.

RULES OF PRACTICE: ADMISSIBILITY OF LATE-FILED CONTENTIONS

Intervenors may be excused for lateness in filing if they keep current with reputable sources of information such as *Science*, *Science News*, and the *Bulletin of the Atomic Scientist*. They need not keep up with all NRC literature and all technical literature concerning nuclear reactors.

CONTENTIONS: PSYCHOLOGICAL STRESS

The Commission is required to consider psychological stress in its environmental analysis providing that there is proof that a nuclear plant will cause people in the vicinity of the plant to suffer anxieties of such severity as to be medically recognized impairments of psychological health.

RULES OF PRACTICE: VALIDITY OF COMMISSION RULE

A court decision purporting to strike down a portion of the Commission's rules on the consideration of waste disposal issues in NEPA analyses does not invalidate those rules until the court issues its mandate. Prior to the issuance of a mandate, the rule is valid and a contention contradicting the rule cannot be admitted.

CONTENTIONS: FUTURE FEDERAL ACTIONS NOT COGNIZABLE UNDER NEPA

A contention that fuel stored in a spent fuel pool might subsequently be used to manufacture nuclear weapons is not cognizable under NEPA because weapons manufacture is not part of the proposed action and would require either federal legislation or further federal administrative action.

CONTENTIONS: PENDING COMMISSION RULE

When the Commission has decided to implement a rule on the environmental qualification of electrical equipment but has not yet decided when to make the rule effective, it is appropriate to admit a contention on the subject. Provision may be made for applicant or staff to stay discovery on the contention if they wish.

TECHNICAL ISSUES DISCUSSED

Embrittlement of electrical insulation; environmental qualification of electric wiring; radiation, effects on polymers; polymer degradation due to radiation; psychological stress, legal standard for NEPA consideration; impingement of fish, minimum standard for NEPA consideration; entrainment of fish, minimum standard for NEPA consideration.

MEMORANDUM AND ORDER

(Concerning Motions to Admit Late Contentions)

Ohio Citizens for Responsible Energy (OCRE) and Sunflower Alliance, Inc., *et al.* (Sunflower) have requested leave to file contentions related to: (A) Substratum Placement of Water Intake Structure (OCRE), (B) Use of Commercial Spent Fuel for Nuclear Weapons (OCRE), (C) Polymer Degradation from Radiation Exposure (OCRE), (D) Psychological Stress (Sunflower), and (E) Improper Consideration in the Draft Environmental Statement of Local Economic Benefits (Sunflower). In addition, OCRE has resubmitted for admission the following contention: (F) Safe Disposal/Storage of Radioactive Materials (OCRE). Appendix A to this opinion lists the abbreviations we will use for the relevant filings, including the replies intervenors filed pursuant to Board order.

We have decided to admit contentions (C), (D) and (E) and to deny admission of the other contentions. Each of the contentions that was excluded was found to lack a proper basis, either for factual or legal reasons. 10 CFR §2.714(b). Having determined that a basis was lacking, we did not consider whether or not there was good cause for late filing of these contentions. 10 CFR §2.714(b) and 2.714(a)(1).

I. SUBSTRATUM PLACEMENT OF WATER INTAKE STRUCTURE

OCRE contends that the water intake structure that is part of the closed-cycle cooling system proposed by Cleveland Electric Illuminating Company (applicant) will kill fish, fish eggs and larvae through impingement or entrainment. OCRE does not consider these losses to be negligible, although it concedes that the losses would be several orders of magnitude less than losses caused by some other Lake Erie power plants. OCRE Reply at 2. *See* NUREG-0884 (Draft Environmental Statement for Perry Nuclear Power Plant, March 1982) §5.5.2.1 at 5-9 to 5-12. OCRE then suggests that applicant could reduce these losses by employing a radial well system of water intake, similar to a system used in the Grand Gulf Nuclear Station.

Staff opposed admission of this contention because OCRE has not provided a basis for the assertion that its proposed intake structure would significantly improve the environmental impact of the present intake design structure. Staff Ans. (1) at 3-4. In response, OCRE argues that the proposed structure would reduce losses from 1×10^4 to zero, which is significant. OCRE Reply at 2.

NUREG-0884, at 5-10, concluded that losses from entrainment at Perry would be similar to the 5,500 per year losses at Davis-Besse Nuclear Power Station during 1979 and 1980. It also found that the species affected "will be rough and forage fish that are numerous in the central basin of the lake." *Id.* at 5-12 to 5-13.

Since OCRE has not provided any reason for disbelieving these findings of the Draft Environmental Statement, we do not consider that it has provided a basis for the belief that the radial well intake structure would substantially improve the overall environmental impact of Perry, even if we accept the assertion that such wells would not kill any fish. Consequently, this contention shall not be admitted for lack of a sufficient basis. (We need not address applicant's argument that the radial well cooling system is not suited to Lake Erie, where its installation would be highly impractical.)

II. USE OF COMMERCIAL FUEL FOR NUCLEAR WEAPONS

OCRE suspects, based on recent actions of the President, recently announced advancements in laser isotope separation technology, statements by the Secretary of the Department of Energy and an excerpt from a Cleveland Electric Illuminating Company publication, that this nation may one day use spent fuel from the Perry plant to build nuclear weapons. As a consequence, OCRE asks that this potential use of spent fuel, and the attendant "horrific consequences of nuclear war", be considered in the Environmental Impact Statement for Perry. OCRE Motion at 3-4; OCRE Reply at 7.

Staff and applicant answer, in part, that the proposed federal action to license this power plant does not include a proposal for the use of nuclear waste for nuclear weapons and that the National Environmental Policy Act of 1969 (NEPA), 42 USC §4332, does not require an evaluation of such a use of waste. Staff Ans. (1) at 13, citing *Kleppe v. Sierra Club*, 427 U.S. 390, 403 *et seq.* (June 28, 1976); Applicant Ans. (1) at 14, citing *Kleppe* and other cases.

OCRE, whose legal competence is evident to both us and the Appeal Board (ALAB-675, 15 NRC 1107, n.1), has no answer to this particular legal argument. Instead, it cites two cases for an entirely correct but irrelevant proposition, that if it cannot gain admission for its contention now it will be far harder for it to reopen the record later. (*Kansas Gas and Electric Company and Kansas City Power and Light Company* (Wolf Creek Generating Station, Unit 1), ALAB-462, 7 NRC 320, 338 (1978); *Public Service Company of Oklahoma* (Black Fox, Units 1 and 2), ALAB-573, 10 NRC 775, 804 (1979)).

There is substantial sense supporting the legal principle that an environmental impact statement may be limited to the effects of the particular federal action that is being proposed. NEPA is a statute. It does not require that legislative action, authorized by the Constitution, be accompanied by environmental statements. If federal actions had to be considered in light of all possible (or likely) legislation which they might facilitate, that process of prognostication likely would hamstring federal actions of many kinds. Furthermore, the benefit from such a process would be slight since citizens already have an opportunity to oppose legislation through the elective process and their right to communicate with and petition their elected representatives.

Even if spent fuel could be diverted for use in weapons through administrative action, it would not be appropriate to speculate about that possibility in this proceeding. When that action is considered, it may be covered by NEPA or may be exempt. It is the action of taking fuel for weapons that is of primary concern to OCRE, and it may challenge that action when it is being considered. It is not appropriate for us to consider an advance challenge to that speculative future action.

Consequently, this contention shall not be admitted because it is not cognizable under NEPA.

III. POLYMER DEGRADATION

OCRE contends that radiation-induced embrittlement of polymers caused by long-term, low-dose exposures, particularly to electrical insulation, may compromise plant safety. OCRE therefore contends that this insulation should be tested under more realistic conditions than the currently prevailing high-dose, short-duration tests. As a basis, OCRE relies on a Sandia Laboratories study which indicates that low-rate, long-duration exposures may indeed cause greater degradation of polymers than does a high-rate, short-duration exposure. *Mechanism of Synergism and Dose Rate Effects*, NUREG CR/2156, June 1981; and *Occurrence and Implications of Radiation Dose-Rate Effects for Material Aging Studies*, NUREG CR/2157, June 1981.

Staff concedes that the basis for this contention is stated with sufficient particularity (Staff Ans. (1) at 15), and we agree. The discussion of this contention therefore shifts to whether OCRE has shown good cause for late filing.

OCRE learned of this problem from *Science News*, March 27, 1982, at 215. OCRE Motion at 6. That is a publication which provides comparatively current information. Consequently, that publication is different from a general news publication which picks up an issue years after it has achieved widespread notoriety. *Compare Cleveland Electric Illuminating Company, et al.* (Perry Nuclear Power Plant, Units 1 and 2), LBP-82-11, 15 NRC 348, 351-52 (1982); Staff Ans. (1) at 16, footnote 44. We therefore agree with OCRE that it would be unfair

to charge it with current knowledge of all NRC publications and that it acts with reasonable diligence when it keeps abreast of journals such as *Science News*, *Science* and the *Bulletin of the Atomic Scientists*, each of which OCRE has cited to us at one time or another in this proceeding. Consequently, we find that OCRE has demonstrated good cause for late filing, the first criterion of 10 CFR §2.714.

The second criterion for late filing favors the admission of this contention. Although there is a relevant interim final rule in effect and a final rule about to be promulgated (more about this below), it appears likely that the Commission will require compliance with the principle OCRE seeks to apply. Furthermore, the applicant has not claimed that it is in compliance with the new rule, so this licensing proceeding is an entirely proper forum for determining compliance.

OCRE also passes the third criterion with flying colors. It has consistently shown the ability to analyze and comprehend technical materials, and we are confident that it may reasonably be expected to participate in the development of a sound record. In its filings on this contention, in particular, its analyses have been sound, and its arguments concerning policy implications have been well reasoned.

The fourth criterion also is met, as OCRE's interest on this issue is not represented by another party. The fifth criterion, while being adverse, is not overly important. We are still at such an early stage of this proceeding that applicant recently has resisted the Board's suggestion that it begin to negotiate target dates for completion of discovery.

On balance, the criteria for late filing also are met. Consequently, both the basis requirement and the late-filing requirement have been met and this contention ordinarily would be admitted. However, effective June 30, 1982, the Commission amended its regulations to suspend completion schedules for environmental qualification of safety-related equipment in operating nuclear power plants. 47 *Fed. Reg.* 28363 (June 30, 1982). The Commission indicated that licensees (and, by implication, applicants) should continue efforts to meet the requirements, but that it was suspending the deadline for compliance. *Id.* at 3. The Commission's rationale relates primarily to operating plants, finding that there would be no undue risk to the public health and safety from continued operation pending completion of the equipment qualification program. *Id.* Its statement does not, however, clarify the applicability of the deadline suspension to pending operating license proceedings, such as this one.

Under the circumstances, it appears highly likely that applicants will be required to show compliance with the electrical qualification rule prior to a license being issued. Hence, it seems better to admit the contention. However, the remaining uncertainty makes it likely that we would grant applicant's or staff's motion to suspend this contention from discovery pending issuance of a final rule. (We urge applicant and staff to consider whether such a motion might be adverse to its interests because it might engender delay.) Should such a motion be filed,

discovery shall be automatically stayed with respect to this contention, which we admit to this proceeding. The contention, as admitted, is:

Issue #9: Applicant has not demonstrated that the exposure of polymers to radiation during the prolonged operating history of Perry would not cause unsafe conditions to occur.

Because of the potential breadth of this contention, we will require OCRE (which shall act as lead intervenor on this contention) to give increased particularity to this contention, by providing greater specificity as to the basis for believing that particular wires or other locations are potentially dangerous, prior to the time for an evidentiary hearing. The schedule of target dates for this case should include a date for particularizing this contention.

We note that applicant argues that the experience of other operating plants demonstrates that there is no imminent danger of degradation of polymers in its plant. However, applicant has not submitted evidence of the current condition of the polymers in analogous plants or established that the location of polymers in its plants is sufficiently analogous to the location at one or more existing plants to provide the requisite safety assurance. Hence, the generally cited experience of other plants does not provide a basis for rejecting this contention.

IV. PSYCHOLOGICAL STRESS

On April 2, 1982, the United States Court of Appeals issued its decision in *People Against Nuclear Energy v. United States Nuclear Regulatory Commission*, No. 81-1131, 678 f.2d 222 (D.C. Cir. 1982) (*PANE*). Sunflower has filed its contention in reliance on that decision.

Applicant's substantive opposition to this contention is that it lacks basis for the belief of "the existence or magnitude of psychological stress for the particular reactor at issue." Applicant Ans. (2) at 3. In response, Sunflower conducted a mail poll of its members. Sunflower Reply (unnumbered attachment). (Sunflower could assist the Board, in the future, by numbering all pages of its filings.) Although many of the excerpts from the member responses do not fit the test of psychological impact prescribed by *PANE*, some of the responses provide a basis for inquiring further and therefore provide a basis for admission of the contention. As with Issue #9, however, further particularity for this contention needs to be provided before the evidentiary hearing so that applicant may be more fully informed of the precise nature of the psychological harm that is being averred.

Staff does not argue that this contention lacks basis or that *PANE* is insufficient grounds for late filing. Instead, it urged us (on May 25, 1982) to await Commission guidance before admitting this contention. At this time, however, we find it difficult to anticipate receiving guidance in the near future; hence, we feel constrained to follow the Commission's previous guidance and to act promptly on this matter. ("The licensing boards should issue timely rulings on all matters.")

Statement of Policy on Conduct of Licensing Proceedings 46 Fed. Reg. 28533 (May 27, 1981) (CLI-81-8, 13 NRC 452)).

We find the following passages of PANE to be controlling:

We conclude that, in the context of NEPA, health encompasses psychological health. To implement a national policy based on “the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man,” 42 U.S.C. §4331 (a)(1976), Congress required each federal agency to utilize a “systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts.” *Id.* §4332(2)(A); see 40 CFR §§1502.6, 1507.2 (1981); cf. *Chelsea Neighborhood Ass’n v. U.S. Postal Service*, 516 F.2d 378, 388 (2d Cir. 1975) (social as well as physical sciences relevant under NEPA; agency must consider dangers of emotional and physical isolation of high-rise apartment building, which might as a result become a “human jungle”).

* * *

NEPA, moreover, does not authorize federal agencies to deal with intangible factors by ignoring them. It expressly instructs all federal agencies to identify and develop methods and procedures “which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations.” 42 U.S.C. §4332(2)(B) (1976).

Id. at 13, 14.

PANE teaches, however, that not every psychologically adverse reaction is cognizable:

We conclude that PANE’s allegation — in the wake of a unique and traumatic nuclear accident — that renewed operation of TMI-1 *may cause medically recognized impairment of the psychological health of neighboring residents* is cognizable under NEPA.

* * *

NEPA does not encompass mere dissatisfactions arising from social opinions, economic concerns, or political disagreements with agency policies. It does apply to *post-traumatic anxieties, accompanied by physical effects and caused by fears of recurring catastrophe*.

[Emphasis added. Footnote deleted.] *Id.* at 16-17.

Obviously there has not been a catastrophe at Perry. However, we interpret PANE to require that Perry’s environmental impact statement consider whether Perry’s operation will cause people in the vicinity of the plant to suffer anxieties of such severity as to be medically recognized impairments of psychological health. PANE holds that such health effects, if present, must be considered under NEPA. The results of Sunflower’s survey of its members give us reason to inquire further

before we decide whether the operation of Perry will cause such effects. Consequently, Sunflower has adequately specified the basis for its contention. (If the Commission decides otherwise, we will modify our decision accordingly.)

Staff concludes that, in light of the *PANE* decision, Sunflower's contention should be considered timely. That decision changed commonly held beliefs about the acceptability of psychological stress contentions; and a filing delay of three months from issuance of the initial decree (explained in an opinion only *after* Sunflower's filing) is not an undue delay. Hence, on balance, we find that the factors governing admission of a late contention are satisfied.

The issue, as admitted, is:

Issue #10: The Draft Environmental Impact Statement has not adequately considered whether Perry's operation will cause people in the vicinity of the plant to suffer anxieties of such severity as to be medically recognized impairments of psychological health.

Sunflower shall be lead intervenor for this contention.

V. LOCAL ECONOMIC EFFECTS IN THE COST-BENEFIT ANALYSIS

Sunflower points out that the Draft Environmental Analysis, at p. 6-2, has, improperly, considered increased employment and tax revenues to be benefits for purposes of the cost-benefit analysis. It cites *Public Service Company of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-471, 7 NRC 477, 479 (1978).

Applicant answers that benefits accruing from local taxes must be considered, together with offsetting costs which Sunflower might have suggested, in order to have a properly balanced EIS. Applicant Ans. (2) at 12-14. However, the citations in applicant's brief appear to stand for the proposition that local taxes may be used to offset costs such as an "influx of workers" but that the taxes may not be themselves considered to be part of the "benefit side" of a cost-benefit analysis. *Id.* at 509, especially footnote 58.

Whatever the merits of the argument between applicant and intervenor on whether local taxes may be a "direct benefit," we need not now decide that issue in order to determine whether the contention should be admitted. Staff has stated that this matter will be "clarified" in the Final Environmental Statement; however, staff apparently is not sure what the nature of this clarification will be. Staff Ans. (2) at 7, compare text and footnote 16. Given this uncertainty as to how the issue of "local costs" will be handled, we think it fair to say that Sunflower's contention addresses an area in which there is a genuine issue of fact concerning whether the matter will be properly handled. Hence, the basis for this contention has been satisfactorily specified.

Applicant also argues that this matter was not raised in a timely fashion, since all the environmental statements in the case — dating back to the construction stage

— dealt with it in the same way. This, however, neglects the fact that the case on which Sunflower relies was decided in 1978, subsequent to the earlier environmental statements prepared for the Perry plant. Hence, we conclude that the way this issue was handled in the DES provides good cause for the filing of this contention. Staff agrees. Staff Ans. (2) at 7. Since this is new information and none of the other factors affecting late contentions militates strongly against the admission of this contention, we have decided that it is proper to admit it.

The admitted contention, for which Sunflower shall be the lead intervenor, is:

Issue #11: The Environmental Impact Statement (EIS) accords too much weight to increased employment and tax revenues to the local community, factors which may not be weighed directly in the cost-benefit balance.

Because the challenged portion of the DES will be altered before the EIS is issued, we have accepted the validity of Sunflower's contention. See LBP-81-24, 14 NRC 175, 190 (1981) (intervenors must make current filings of contentions, so the basis for a contention must be viewed in light of whether there is a *current deficiency* in the relevant documents, not in light of a new document which may be filed later). However, we will expect Sunflower to specify the basis for finding the Environmental Impact Statement to be deficient prior to the time when an evidentiary hearing may be held on this contention.

VI. MOTION TO RESUBMIT CONTENTION ON RADIOACTIVE WASTE

OCRE argues that a recent decision of the U.S. Court of Appeals for the District of Columbia requires this Board to admit its Contention 15, entitled "Safe Disposal/Storage of Radioactive Materials." *Natural Resources Defense Council v. NRC (NRDC)*, Civil Action No. 74-1586 (April 27, 1982). As OCRE correctly states, the majority in the *NRDC* case criticized the "zero-release assumption," which it found to be necessary to the validity of Table S-3, 10 CFR §51.20(e). OCRE Resubmit at 1-2.

However, as applicant correctly indicates, the U.S. Court of Appeals has stayed its mandate pending final resolution of the petition for rehearing *en banc* in that case. Hence, Table S3 continues to be in effect, as it may continue to be until the *NRDC* case is finally resolved. Until that mandate is issued, the rules of the Commission remain in effect and this Board continues to be bound by them. As a result, the Court of Appeals' decision does not as yet provide a ground for resubmission of this contention.

In light of the ground for our decision, we need not address applicant's argument that resubmission would be inappropriate even had the *NRDC* mandate been issued.

VII. ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 12th day of July, 1982,

ORDERED

(1) The following contentions shall be admitted as issues in this proceeding:

Issue #9: Applicant has not demonstrated that the exposure of polymers to radiation during the prolonged operating history of Perry would not cause unsafe conditions to occur.

Issue #10: The Draft Environmental Impact Statement has not adequately considered whether Perry's operation will cause people in the vicinity of the plant to suffer anxieties of such severity as to be medically recognized impairments of psychological health.

Issue #11: The Environmental Impact Statement (EIS) accords too much weight to increased employment and tax revenues to the local community, factors which may not be weighed directly in the cost-benefit balance.

(2) The lead intervenors for the admitted contentions shall be: Ohio Citizens for Responsible Energy (OCRE) for Issue #9 and the Sunflower Alliance Inc., *et al.* (Sunflower) for Issues #10 and 11.

(3) All other contentions submitted or resubmitted to the Board by OCRE or Sunflower on April 22, 1982, May 5, 1982 and June 1, 1982, are denied admission as issues in this proceeding.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Jerry R. Kline
ADMINISTRATIVE JUDGE

Frederick J. Shon
ADMINISTRATIVE JUDGE

Bethesda, Maryland

APPENDIX A
FILINGS CONCERNING LATE CONTENTIONS

NAME OF FILING	DATE	ABBREVIATED CITATION
OCRE Motion for Leave to File Its Contentions 17, 18, and 19	April 22, 1982	OCRE Motion
Motion for Leave to Submit Additional Contentions	May 5, 1982	Sunflower Motion
Applicant's Answer to OCRE Motion for Leave to File Its Contentions 17, 18, and 19	May 7, 1982	Applicant Ans. (1)
Response of NRC Staff to Motion of OCRE for Leave to File Its Contentions 17, 18, and 19	May 12, 1982	Staff Ans. (1)
Applicant's Answer to Sunflower Motion for Leave to Submit Additional Contentions	May 20, 1982	Applicant Ans. (2)
Response of NRC Staff to Motion of Sunflower for Leave to Submit Additional Contentions	May 25, 1982	Staff Ans. (2)
OCRE Reply [Concerning] Contentions 17, 18, and 19	June 1, 1982	OCRE Reply
OCRE Motion to Resubmit Contention 15	June 1, 1982	OCRE Resubmit
Applicant's Answer to OCRE Motion to Resubmit Contention 15	June 16, 1982	Applicant Ans. (3)
Response of NRC Staff [Concerning] OCRE Contention 15	June 21, 1982	Staff Ans. (3)
Reply Brief of Sunflower [Concerning] Two Late-Filed Contentions	June 21, 1982	Sunflower Reply

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Dr. Jerry R. Kilne
Mr. Frederick J. Shon

In the Matter of

Docket Nos. 50-440-OL
50-441-OL

CLEVELAND ELECTRIC ILLUMINATING
COMPANY, *et al.*
(Perry Nuclear Power Plant, Units 1 & 2)

July 19, 1982

The Licensing Board revises its earlier decision (LBP-82-53) and dismisses a psychological stress contention based on a statement of policy issued by the Commission.

MEMORANDUM AND ORDER
(Concerning Psychological Stress Contention)

On July 16, 1982, the Nuclear Regulatory Commission issued a statement of policy, "Consideration of Psychological Stress Issues", 47 *Fed. Reg.* 31762 (July 22, 1982). The policy promulgated by the Commission excludes the consideration of psychological stress issues in our proceeding. We are directed to assure that three elements are present before we consider a psychological stress contention. *Id.* at 31762. One of those elements is that a traumatic event must already have occurred at the site in question. *Id.* Furthermore, we are told that "the only nuclear plant accident that has occurred to date that is sufficiently serious to trigger

consideration of psychological stress under NEPA is the Three Mile Island Unit 2 accident." *Id.* at 31762-63.

Accordingly, Issue #10, admitted by our order of July 12, 1982 (LBP-82-53, 16 NRC 196), must be dismissed. Since this order is issued without benefit of briefs from the parties, we will be receptive to serious legal argument concerning the revision of this order. Motions for reconsideration or clarification must be filed within 20 days of receipt of this order.

ORDERED

That Issue #10, concerning consideration of psychological stress in the NEPA balance, is dismissed from this proceeding, but that parties may file motions for Reconsideration or Clarification of this Order within 20 days of receipt of this order.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE**

Bethesda, Maryland,
July 19, 1982.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**John H. Frye, III, Chairman
Dr. M. Stanley Livingston
Dr. Frank F. Hooper**

In the Matter of

Docket No. 50-358-OL

**CINCINNATI GAS & ELECTRIC COMPANY,
et al.
(Zimmer Nuclear Power Station,
Unit 1)**

July 15, 1982

Licensing Board rules that an intervenor proposing eight untimely contentions challenging applicants' quality assurance procedures and character and competence to operate a nuclear facility failed to meet the standards of 10 CFR §2.714. In light of the seriousness of the issues, the Board adopts them *sua sponte*.

**RULES OF PRACTICE: ADMISSIBILITY OF LATE-FILED
CONTENTIONS**

When untimely contentions are advanced on the eve of an initial decision which ordinarily would conclude Licensing Board consideration of an application, the proponent must furnish substantial justification for the delay.

RULES OF PRACTICE: REOPENING THE RECORD

When untimely proposed contentions raise issues so serious that a decision adverse to the applicant might require denial of an operating license, the Licensing Board may exercise its authority under 10 CFR §§2.718(j) and 2.760a to reopen the record and admit the contentions as Board-raised issues.

STANDING TO INTERVENE: REPRESENTATIONAL STANDING

It is a clear requirement for representational standing that an organization seeking to represent the interests of its members submit evidence of authorization to do so from at least one member with standing to participate in the proceeding.

MEMORANDUM AND ORDER (MVPP's Motion for Leave to File New Contentions)

On May 18, 1982, the Miami Valley Power Project (MVPP), an Intervenor in this proceeding, filed a Motion for Leave to File New Contentions. That Motion states eight new contentions concerning two general areas: first, the status of quality assurance pertaining to the construction of the Zimmer Station; and second, the corporate character and competence of Cincinnati Gas and Electric Company, the lead Applicant, to operate a nuclear generating station. None of these contentions concern matters previously litigated in this case.

The Motion begins with a "History of Breakdown of Quality Assurance Program." This History alludes to reports issued by the NRC's Office of Inspection and Enforcement (I&E) of July, 1980, April, 1981, and November, 1981. It also alludes to a report of the NRC's Office of Inspector and Auditor (OIA) of August, 1981, which was released in November, 1981. The History notes that the I&E report of November, 1981, proposed a \$200,000 fine which was paid in February, 1982, and that the April, 1981, I&E report led to the institution by CG&E, of a Quality Confirmation Program. The History also refers to various communications between Commission officials and Congress on this matter.

The History continues:

It appeared that the regulatory system had identified and taken adequate corrective action against fundamental quality abuses at Zimmer. Recently, however, MVPP has learned that — (1) the OIA and IE Reports revealed only a small portion of the QA breakdown and resulting hardware damage; (2) the causes and responsibility for the QA breakdown rest squarely with high-level CG&E management; and (3) neither CG&E nor RIII have followed through with adequate corrective action. As a result, the RIII-imposed Quality Confirmation Program may further exacerbate the previous QA breakdown, while providing the public with false reassurances that a "final solution" has been achieved at Zimmer.

The Motion does not specifically identify the information which MVPP asserts it recently learned, or when that information was learned.

The Motion next recites the eight proposed contentions and their bases (the contentions and bases are set out in the Appendix), addresses the criteria for the

acceptance of untimely contentions set out in 10 CFR §2.714, and indicates that MVPP intends to request a protective order which would prevent disclosure of the identities of certain witnesses who are CG&E employees except to the Board. These witnesses, it is alleged, will furnish further bases for the contentions.

Applicants take sharp issue with MVPP's Motion. They begin by attacking MVPP's status as a party to this proceeding, then attack the contentions as untimely, assert that MVPP must demonstrate a need to reopen the record, and conclude by attacking the contentions themselves. Applicants also attack MVPP's asserted need for a protective order as illustrating a desire to ". . . deny[] Applicants due process and strangl[e] this proceeding by delay and obfuscation" (Applicants' Answer, p. 49).

Staff supports MVPP's Motion:

The Staff recognizes that there is validity to the Applicants' statement of the applicable law contained in Applicants' Answer. However, the breakdown in the Applicants' quality assurance program which has resulted in construction defects, and which, in the course of the ongoing investigation, may result in the discovery of more construction defects at the Zimmer plant raises a serious safety question. The information regarding the extent of the construction defects has the potential for resulting in the possible denial of an operating license. In the special circumstances of this case, the Staff's position is that the public interest is best served by the Board reopening the record and admitting the eight contentions proffered by MVPP as issues in controversy. (NRC Staff Response, p. 5; footnote omitted.)

Applicants' discussion of the decisions interpreting the requirements which must be met if tardy contentions are to be accepted does, as recognized by Staff, have validity. Further, Applicants' argument that MVPP has not met these requirements, particularly the "good cause" requirement, has much to recommend it. MVPP seems to have anticipated this argument. MVPP urges the Board to exercise its discretionary authority to admit the contentions.

Applicants also devote considerable time to the proposition that ". . . the group [MVPP] admitted as an intervenor by the Licensing Board in 1976 is not, in reality, the one pursuing these new contentions. A new entity, which is a legal stranger to the proceeding, has arrived to take the baton from previous entities which have participated in various prior stages of this proceeding, albeit under the same name" (Applicants' Answer, p. 5). Applicants base their argument on the fact that when MVPP was admitted as an intervenor, it was centered in Dayton, Ohio, and its members were customers of Dayton Power & Light Company, a co-Applicant. Now the organization is a "wholly owned subsidiary of the Cincinnati Alliance for Responsible Energy (CARE)" (CARE Press Release of May 18, 1982). According to Applicants, its members reside in or near Cincinnati.

Finally, Applicants assert that, at this very late stage of this proceeding, MVPP has furnished too little in the way of specific bases for its proposed contentions.

Applicants argue that no new information is cited by MVPP, and that its allusion to certain affidavits, interviews and internal Applicant documents should be ignored by the Board because they were not submitted in support of the Motion.

Ordinarily, in this state of affairs, we would have afforded MVPP an opportunity to respond to the arguments which Applicants have raised. See *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-565, 10 NRC 521 (1979). After having received that response, we would have ruled on the Motion.

However, because of the extraordinary situation presented by the MVPP Motion, we had not elected that procedure, and were about to issue a Memorandum and Order when MVPP's Reply to the Applicants and Staff was received. Consequently we have considered that Reply and find that it does not alter our conclusions.

In its Reply, MVPP addresses the points raised by Applicants. With regard to the factors to be addressed in order to satisfy the requirements of 10 CFR §2.714 for acceptance of tardy contentions, MVPP makes a very weak showing.

Pursuant to Section 2.714(a), a licensing board must balance the following factors in determining whether to grant an untimely motion to file contentions:

- 1) good cause, if any, for failure to file on time;
- 2) the availability of other means for protecting the petitioner's interests;
- 3) the extent to which petitioner's participation might reasonably assist in developing a sound record;
- 4) the extent to which the petitioner's interest will be represented by existing parties; and
- 5) the extent to which petitioner's participation will broaden the issues or delay the proceeding.

As to good cause for the late submission, MVPP fails to tell us when it learned the information which prompted the Motion and is vague as to precisely what this information is. Given the timing of its Motion (on the eve of an Initial Decision which normally would have concluded this Board's consideration of the license application) we think this failure is particularly significant. Its presentation on the availability of other means whereby its interest might be protected seems to miss the mark — it focuses instead on the proposition that Mr. Applegate's charges regarding quality assurance (QA) at Zimmer have been substantiated and that MVPP is responsible for bringing QA to the attention of the Board. Although brief, its presentation of its ability to assist in developing the record is borne out by its pleadings and related papers, and it seems self-evident that no other party will represent MVPP's interest if its Motion is denied. These two factors are the strongest in MVPP's favor. Finally, we believe that MVPP is clearly and indisputably wrong in its belief that granting its Motion will not delay the proceeding. If the Motion is denied, two matters relating to offsite emergency planning remain to be considered. The Board anticipates that these matters should be

expeditiously concluded. On the other hand, MVPP's Motion raises matters which may well involve lengthy proceedings before this Board. In conclusion, we find that the balance of the five factors in this case tips against MVPP.

Applicants devote considerable discussion to the legal standards for reopening records and the proposition that MVPP has not satisfied them. We entertain some doubt that these standards are applicable. We do not mean to suggest that a less stringent standard should apply; however, we read the decisions on this point as relating to situations in which reopening is requested on an issue which was previously heard. This is not the situation here; none of the proposed contentions have been the subject of previous hearings.

In any event, MVPP's presentation in answer to Applicants suffers from the same difficulties identified above with respect to its showing of good cause for failure to file its proposed contentions in a timely fashion. While MVPP asserts that it proceeded expeditiously after it learned of new information, it does not specifically identify this information or tell us when it became available. In fact, that presentation indicates that MVPP has long been critical of the Zimmer QA program. More should have been furnished to indicate why, at a minimum, MVPP waited from November, 1981, to May, 1982, to file its contentions. Litigation must come to an end. A party should not wait until the eve of an Initial Decision which normally would conclude a proceeding before advancing new contentions unless substantial justification for that course is present.

However, as we have noted, this state of affairs is not ordinary. As Staff points out, the proposed contentions raise issues which are indeed serious. A decision adverse to Applicants could dictate the denial of an operating license. The Staff has identified Zimmer as a plant with a serious quality assurance breakdown. (Testimony of William J. Dircks before the Subcommittee on Energy and the Environment of the Committee on Interior and Insular Affairs, U.S. House of Representatives, November 19, 1981.) Fines have been imposed by Staff and paid with respect to this breakdown. The Commissioners were recently briefed on this situation by Applicants and MVPP, indicating the continuing concern about the matter.

In these circumstances, we agree with the Staff's assessment that the public interest requires reopening of the record to litigate these contentions. We believe that this consideration overrides legal niceties pertaining to acceptance of untimely contentions and reopening of records. Consequently, we are exercising our authority pursuant to 10 CFR §§2.718(j) and 2.760a to reopen the record and admit the eight contentions advanced by MVPP as Board-raised issues. In our recent Initial Decision (LBP-82-48, 15 NRC 1549 (1982)) we specifically retained jurisdiction to take this step. *Cf. Carolina Power and Light Company* (Shearon Harris Nuclear Power Plant, Units 1, 2, 3, and 4), LBP-78-2, 7 NRC 83 (1978). In a Memorandum of even date herewith, we are advising the Commissioners of this action.

Further, we do not believe that Applicants are correct in their position that hearings on these contentions would be counterproductive to or at least ineffectual for improving the implementation of the Zimmer QA program as Applicants seem to assert. To the contrary, we believe that a full public airing of this matter will not only contribute to public confidence, but will also strengthen the QA program. Subjecting this program to the scrutiny of the Commission's adjudicatory process can only contribute, not detract, to reasonable assurance that the public health and safety will be protected.

With respect to the proposition that resources should be spent on inspections, not hearings, we note that the portion of the Commission's decision in *Public Service Company of Indiana* (Marble Hill Nuclear Generating Station, Units 1 and 2), CLI-80-10, 11 NRC 438 (1980) quoted by Applicants at pp. 42-43 of their Answer clearly is concerned with the husbanding of NRC Staff, not utility, resources. Moreover, we are here concerned with a licensing rather than an enforcement proceeding (*Marble Hill* was the latter). Consequently Applicants may not prevent litigation of a matter solely on the assertion that Staff is taking care of it. Finally, we think the fact that the Staff asserts the need for a hearing in this instance is also significant.

There remains the question of MVPP's status as an Intervenor in this proceeding. This is not the first time that Applicants have raised this issue. On March 8, 1979, Applicants sought to require MVPP to answer certain interrogatories with respect to its membership. In their Motion, Applicants alleged that MVPP apparently had changed from an organization comprised of Dayton residents to one comprised of Cincinnati residents. Applicants' interrogatories sought information on this point. We denied Applicants' Motion with respect to these interrogatories in an unpublished Order of April 17, 1979.

Applicants' present position essentially raises only one new fact: that MVPP is a "wholly-owned" subsidiary of CARE. MVPP, in its Reply, acknowledges this fact and states that it is "a Cincinnati grassroots citizens' group" (Reply, p. 2). Applicants do not demonstrate the materiality of the fact that MVPP is owned by CARE. MVPP participates as a representative of its members. Applicants' allegations with regard to MVPP's membership are the same now as they were in 1979, and MVPP now states that its members are Cincinnatians. Whether MVPP is "wholly owned" by CARE does not appear relevant to its representation of its members. For this reason, we treat Applicants' challenge on this point as raising nothing new which would dictate a different result from that we reached in April, 1979.

This result is in accord with *Gulf States Utilities Company* (River Bend Station, Units 1 and 2), ALAB-358, 4 NRC 558 (1976), where applicants sought to dismiss the intervention of an individual on the ground that the location of his residence, which was the basis of his standing, had been changed to a distant site. There the Appeal Board held:

We are less confident than is the applicant that, taken by itself, Mr. Pozzi's apparent transfer of his residence from Louisiana to California would be enough to require the dismissal of his intervention. But that question need not be decided here. Just last year, we had occasion to observe that "intervention in an NRC adjudicatory proceeding does not carry with it a license to step into and out of the consideration of a particular issue at will." *Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-288, 2 NRC 390, 393 (1975). Where, as here, a change of residence to an area not in proximity to the reactor is coupled with a virtual total failure on the part of the intervenor to have assumed a significant participational role in the proceeding, it is difficult to discern a useful purpose to be served in allowing the intervention to continue. This is so irrespective of whether one views an intervention simply in terms of the protection of the interest of the particular intervenor or, rather, as having a broader significance in the realm of the furtherance of a public interest.

4 NRC at 560, footnotes omitted.

Unlike the *River Bend* intervenor, MVPP has taken an active role in this proceeding from its inception. Nor do Applicants allege that it will not continue to do so. From all that now appears, it must be anticipated that MVPP will continue to actively participate and is in a position to make a substantial contribution to the record. We also note that the alleged change in MVPP's membership from Dayton residents to Cincinnati residents would appear to strengthen, rather than weaken, MVPP's standing.

Nonetheless, we note that at the time MVPP was permitted to intervene, it did not submit an authorization from any of its members to represent their interest. Such an authorization is now a clear requirement for an organization seeking to protect its members' interests. *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-535, 9 NRC 377 (1979). Consequently, MVPP should now submit such an authorization from at least one of its members with standing to participate in this proceeding.

By a separate Notice, we are scheduling a prehearing conference to be held at Cincinnati, Ohio. At that conference we intend to discuss and set a schedule for consideration of the contentions set out in the Appendix, MVPP's Motion for a Protective Order, and any other matters relevant to hearing and resolution of the contentions.

ORDER

In consideration of the above, it is this 15th day of July, 1982,
ORDERED

1. The record in this proceeding is reopened;

2. The eight contentions set out in the Appendix are admitted as Board issues, and

3. By July 30, 1982, MVPP is to file an authorization from at least one MVPP member with standing to participate in this proceeding permitting MVPP to represent his or her interest.

Judges Hooper and Livingston concur, but were unavailable to sign this Memorandum and Order.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**John H. Frye, III, Chairman
ADMINISTRATIVE JUDGE**

Bethesda, Maryland
July 15, 1982

APPENDIX

MIAMI VALLEY POWER PROJECT CONTENTIONS RAISED *SUA SPONTE* BY THE ATOMIC SAFETY AND LICENSING BOARD

1. CG&E and Kaiser Engineering, Inc. ("KEI") have failed to maintain sufficient quality assurance controls to ensure that the as-built condition of the plant reflects the final version of a design that complies with all applicable regulations and requirements for public health and safety, as required by 10 CFR Part 50, Appendix B.

To illustrate, installation has proceeded on the basis of construction aids rather than final drawings approved by the architect/engineer, Sargent and Lundy ("S&L"). Further, design revisions have not been fully incorporated and distributed to all relevant construction and QA personnel. As a result, the as-built condition of the plant does not match the approved final design. Even if the specified equipment were installed in the designated locations, however, S&L approved erroneous Design Document Changes ("DDC").

The basis for this contention includes IE Report §§4, 7, and Attachment A; affidavits from witnesses about the suppression pool, large-bore and small-bore piping, and hangers in the primary containment; interviews with current or former employees willing to testify; and internal CG&E and KEI documents.

2. CG&E and KEI have failed to maintain adequate material traceability to identify and document the history of all material, parts, components and welds, as required by 10 CFR Part 50, Appendix B, Criterion VIII.

To illustrate, it is impossible to identify and trace the history of items due to flaws such as inaccurate or overgeneralized blueprints; installation damage to materials; missing, incomplete, or unreliable records; and lack of identifying markings on equipment.

As a result, there exists little basis to rely on the existing traceability system. Guessing and unproven assumptions undermine the traceability records that do exist.

The basis for this contention includes IE Report §§4-7; affidavits that demonstrate that methods are inadequate to identify and control large and small bore piping, flanges, and welds, as illustrations that prove a breakdown throughout the plant; examples supplied by current or former employees; and internal CG&E and KEI documents.

3. CG&E and KEI have failed to maintain an adequate quality assurance program for vendor purchases, as required by 10 CFR Part 50, Appendix B, Criterion VIII.

The QA breakdown for vendor purchases has been systematic, from selection of individual vendors to toleration of hardware defects uncovered after installation. To illustrate, vendors have been accepted for the approved vendors list on the most superficial basis, such as unsupported memoranda from CG&E and/or KEI management, or a review of vendor QA manuals unsupported by on-site surveys. As a result, unqualified vendors have been placed on the Approved Vendors List ("AVL"). Once on the AVL list, it has been unreasonably difficult to remove the vendors despite poor performance.

CG&E has improperly made vendor purchases and then directed KEI to assume quality assurance responsibility for the purchases. KEI receipt inspection was improperly restricted to a check for transit damage and completeness. CG&E denied permission to KEI to conduct necessary source inspections of vendors. CG&E and KEI did not maintain reliable, comprehensive identification records and documentation packages, which resulted in uncertain traceability.

After receiving vendor purchases, the items frequently were upgraded from "non-essential" to "essential" status. As a result, items were installed in critical safety systems without first meeting the corresponding safety requirements. When QA/QC inspectors found defects in vendor hardware, they were instructed not to write up Nonconformance Reports ("NR").

The vendor QA breakdown spilled over into the rest of the plant. Inadequate traceability has led to confusion over which items are vendor purchases and which are not. Vendor purchases at Zimmer are not covered by on-site QA inspectors. As a result, in a significant number of cases items fabricated on-site have been erroneously defined-out of the CG&E and KEI QA systems.

The flaws described above are illustrative, not exhaustive. This contention applies to safety systems throughout the plant. Tens of thousands of purchase orders are questionable.

The basis for the contention includes IE Report §7; affidavits from current or former plant employees; interviews with current and former plant employees willing to testify; and internal CG&E and KEI documents.

4. CG&E and Kaiser have failed to maintain an adequate quality assurance program, to identify and correct construction deficiencies, as required by 10 CFR Part 50, Appendix B, Criterion XVI. This contention challenges the structure and premises of the QA program at Zimmer, rather than specific inspection hardware deficiencies.

To illustrate, traditionally there has not been a comprehensive quality assurance manual for either CG&E and KEI QA/QC personnel. Training procedures for QA/QC personnel have been inadequate, and some classes were taught by instructors with few qualifications. Until establishment of the Quality Confirmation Program, the KEI QA/QC program was severely understaff at CG&E's direction. Mandatory inspections did not occur of safety-related items. Necessary audits were not conducted for unjustifiably long periods. CG&E and KEI management have not always made good faith efforts to comply with audit recommendations. Corrective action procedures for identified construction defects have looked to correct QA defects prospectively while failing to reinspect for the damage that may have been previously overlooked. Underpinning all these structural flaws has been the core of the QA breakdown at Zimmer — the lack of independence for QA/QC departments and personnel from their construction counterparts, in both the CG&E and KEI organizations. The absence of even a minimally acceptable QA program casts a shadow over all safety-related systems at Zimmer.

The basis for this contention includes the congressional testimony and public statements of NRC officials, Exhibits 1-6; IE Report §§4-7 and Attachment A; affidavits from and interviews with current and former employees; and internal CG&E and KEI documents.

5. CG&E and KEI officials failed to maintain adequate controls to process and respond to internal Nonconformance Reports identifying violations of internal or government requirements. To illustrate the scope of the problem, the IE Report analyzed in-depth 26 reports of nonconforming conditions out of over 1000 that were voided between 1978 and 1981. The IE Report concluded that 25 out of the 26 reports were voided erroneously. Potentially thousands of NR's have been improperly voided or discarded under the QA program.

To illustrate, KEI QA inspectors in practice have been ordered not to write NR's on procedural or "software" deficiencies. A convoluted system of multiple approvals makes it unreasonably difficult to issue NR's. CG&E has developed a bewildering system of reports on nonconforming conditions including Surveillance Reports, Inspection Reports, Corrective Action Recommendations ("CAR")

and In-Process Inspection Deficiency Reports, punch lists and exception lists. These QA report categories avoid the accountability and NRC oversight of the NR system, and thus violate Appendix B.

Many NR's have been eliminated entirely from the QA system. For example, NR's have been voided as "not issued," and so expunged from the QA records' system. In a significant number of cases, NR's voided as "Not Issued" cannot now be found.

Due to this high ratio of improperly voided NR's Zimmer contains an unknown number of dormant, identified deficiencies which were found and later lost or dispositioned without correcting the identified defects. Any decision to license Zimmer is premature until all QA reports on nonconforming conditions are located, entered into the NR system and properly dispositioned through adequate corrective action.

The basis for this contention includes IE Report §§4-7; the OIA Report; affidavits and interviews with current and former Zimmer employee witnesses; and internal CG&E and KEI documents.

6. CG&E and KEI have engaged in illegal retaliation against QA/QC personnel who attempt diligently to perform their duties or who disclose QA problems to the NRC. This retaliation violates 10 CFR Part 19 and Part 50, Appendix B, Criterion I. Harassment occurred on all levels. Both CG&E and KEI openly tried to discourage or neutralize QA/QC initiatives, internal disclosures through this retaliation, or employee disclosures to the NRC.

To illustrate, construction personnel on at least one occasion physically attacked, and repeatedly intimidated QA inspectors. QC personnel attempting to conduct inspections were doused with buckets of water and scattered with high-pressure fire hoses. Management officials did not pursue and discipline the offenders, nor did they deter repeat harassment.

KEI top management berated QC inspectors and supervisors for writing up nonconformances. Both CG&E and KEI management retaliated against employees who pursued significant corrective action programs for QA violations, or disclosed serious violations to the NRC during its 1981 reinvestigation. These reprisals included dismissal, demotions and job transfers.

Employees who retracted or modified their NRC statements, after interviews with CG&E counsel, kept their supervisory positions. This pattern stretches from the mid-1970's to 1982.

CG&E removed Butler Services, Inc. and Peabody Magnaflux, Inc., from responsibilities for QC inspection and radiographs, respectively, in an effort to destroy the independence of this portion of the QA program.

On both the individual and institutional level, reprisal victims were replaced with substitutes whose qualifications and commitments to sound QA practices are open to serious challenge. These examples are illustrative, not exhaustive, of an environment where it takes repeated acts of courage for QA/QC personnel to do

their jobs rights. QC inspections and findings that arose out of fear and pressure are an inadequate basis to satisfy public health and safety requirements.

The basis for this contention includes IE Report §§4 and 6; CG&E letter concerning fine, attached and incorporated herein as exhibit 7; affidavits from and interviews with witnesses; and additional documents.

7. The CG&E Quality Confirmation Program ("QCP") is inadequate to mitigate or remedy the serious consequences of QA breakdown at Zimmer. On April 8, 1981 RIII imposed on the Zimmer QA program the QCP as a structural reform intended to neutralize the previous abuses. CG&E obtained NRC approval for the QCP and administers it on an ongoing basis. The QCP has led to a welcome increase of QA personnel. However, the QCP is fundamentally deficient in that its scope is too narrow and its implementation spotty.

To illustrate, the QCP plan presented as Exhibit 17 of the IE Report gives broad discretion to CG&E, instead of clearly defined specific duties. This fails to guarantee a full solution for the quality assurance program "totally out of control."

To illustrate further, the QCP is only a review and sampling program of individual deficiencies, not a 100-percent reinspection of all safety-related systems. CG&E has the discretion to select small samples for reinspections that may give a clean bill of health to large safety systems which remain shot through with structural deficiencies.

The QCP applies only to deficiencies identified by the NRC. New information obtained by MVPP evidences potential QA and hardware problems ranging far beyond those disclosed in the IE Report and demonstrates the need for a 100-percent reinspection of all safety equipment installed on-site. A review based on the public record to date and the even smaller sampling reinspection program is a hopelessly inadequate response to a near-decade of substandard quality control at Zimmer.

This list does not claim to be comprehensive, but represents merely a few structural flaws in the QCP based on information currently available to MVPP. Additional weaknesses will be identified as the details of the QCP are made available.

The basis for this contention includes IE Report Exhibit 17; conversations with RIII management officials; and affidavits and interviews with witnesses willing to testify.

8. CG&E lacks the necessary character and competence to operate a nuclear power plant. In *Houston Lighting and Power Company* (South Texas Project, Units 1 and 2), CLI-80-32, 12 NRC 281 (1980), the Commission held that abdication of responsibility for construction to its contractor or abdication of knowledge about construction activities by a prospective licensee is an independent, sufficient basis to deny an operating license: "In large part, decisions about licenses are predictive in nature, and the Commission cannot ignore abdication of

responsibility or abdication of knowledge by a license applicant when it is called upon to decide if a license for a nuclear facility should be granted.” 12 NRC at 291.

The most charitable explanation for the massive QA breakdown is that CG&E abdicated its duty to devise a technically competent QA program and to monitor that program. This generous assessment of CG&E’s performance during the construction phase is consistent with the conclusions of the IE Report, and certainly sufficient to deny Applicant an operating license.

In fact, CG&E has been well aware of KEI’s QA program. CG&E management made key decisions about the QA program and has had a cominant role since at least 1974. (Examples of internal memoranda confirming this relationship are attached and incorporated herein as Exhibit 8.) On the public record, the IE Report references over a dozen examples of CG&E knowledge of or participation in activities covered by the RIII investigation, despite its conclusions. (See, *e.g.*, IE Report Exhibits 4, 5 and 52, attached and incorporated herein as Exhibit 9 by reference.) According to Exhibit 52 of the IE Report, former CG&E QA manager William Schwiens said that CG&E suffers the same lack of independence from construction as Kaiser. He also admitted that CG&E management was responsible for refusing to increase KEI’s requests for additional QA/QC personnel.

CG&E also denied Kaiser authorization to spend funds for adequate QA staff and training, and the CG&E construction department generally dominated the Applicant’s QA program. CG&E has adopted the same philosophy the NRC attributed to KEI—the perspective that QA activities are an unwanted impediment to construction. CG&E made the key decisions in the construction. CG&E made the key decisions in the QA program for vendor purchases, on occasion despite objections from Kaiser’s QA personnel. CG&E mishandled QA/QC records and sustained clearly inadequate QA procedures equivalent to those of KEI.

CG&E activities in other context raise serious concerns about its character. A comparison of the public record, and CG&E correspondence with a church shareholder organization of American Electric Power, a co-owner of Zimmer, is illustrative. An attached CG&E letter sent to the shareholder organization is undeniably inaccurate in its description of the RIII reinvestigation, despite the NRC’s prior notice to CG&E of serious deficiencies. The NRC’s “early” findings were so significant that the Quality Confirmation Program orders instituted on April 8, 1981, over 7 months before the IE Report was released. (Compare CG&E letter of April 3, 1981 with the IE Report at 155-57, attached and incorporated herein as Exhibit 10.)

Similarly, in November and December 1981, CG&E representatives publicly made blanket statements denying hardware problems in general and *any single* defective weld in particular, despite a previous notice of NRC laboratory tests that demonstrated these deficiencies. Compare IE Report No. 50-358/81-27 at 7-8, with a November 26, 1981 news article, attached and enclosed herein as Exhibit

11. On November 16, 10 days before CG&E President Dickhoner's assertions of a clean hardware bill of health, the NRC informed the Applicant, *inter alia*:

The visual examination of piping welds that were conducted revealed six welds which exceeded the ASME Code allowable reinforcement height on the outside surface of the weld.

For each of the above inaccurate self-serving statements by CG&E, evidence was not publicly available at that time to refute the Applicant's misrepresentations.

In *Houston Power and Lighting, supra*, the Commission emphasized that false statements to the NRC, and particularly intentional false statements, are grounds to deny an operating license. There is evidence that records relating to such basic QA defects as material traceability and personnel qualifications were intentionally falsified. Similarly the OIA Report disclosed that construction crews made informal, undocumented repairs on welds. These repairs were made concurrently with the NRC inspectors' review of inaccurate paperwork on the very same welds. Although MVPP does not claim at the present time that CG&E officials were responsible for any deliberate falsification, such significant misconduct evidences applicant's failure to supervise the QA program to ensure its independent and proper operation.

In some instances KEI employees engaged in deceptive conduct toward the NRC. For example, when RIII requested copies of all essential, and later nonessential voided nonconformance reports, KEI personnel did not include voided NR's improperly filed with Inspection reports. Their excuse was that RIII had not asked for voided NR's filed with Inspection Reports.

Any remaining doubts about the necessity for a full hearing on CG&E's character and competence should be resolved by a currently-suspended criminal investigation of QA abuses, as well as the congressional call to pursue the probe more aggressively. Last summer OIA began a criminal investigation into falsified QA reports and failure to conduct mandatory inspections. However, the OIA criminal probe has been suspended until some time between August and October 1982, when Part II of the RIII reinvestigation will be completed. The issues addressed in Exhibit 52 of the IE Report, the interview with CG&E QA manager William Schwiers, suggest that CG&E officials may have been targets of the investigation. NRC investigators inquired into the role of CG&E Vice President Earl Borgman. This criminal investigation was so significant that on October 27 and 28, 1981 the NRC Commissioners considered the ongoing law enforcement proceedings in a closed meeting on Zimmer.

A March 19, 1982 letter from Intervenor's counsel to the United States Attorney for the Southern District of Ohio is attached and incorporated herein as Exhibit 12, along with the accompanying original exhibits.

Evidence of harassment and retaliation toward employees coupled with criminal falsification of records has led to calls from Congress for a criminal investigation. As Representative Toby Moffett (D-Conn.) explained:

Such harassment, as this Subcommittee has already found through previous investigations and as the NRC has now admitted in its own investigation, are precisely the sort of actions that occurred at the Zimmer site near Cincinnati.

These new criminal penalties were not placed in the Atomic Energy Act as window-dressing. The Congress provided for criminal penalties for utility failures to obey NRC safety rules for a very important reason: the public health can be endangered by nuclear crimes just as surely as it can be by street crimes.

Congressman Moffett's December 14, 1981, opening statement at congressional hearings is attached and incorporated herein as Exhibit 13.

Evidence of non-QA related criminal and noncriminal misconduct must also be examined before this Board in granting Applicant an operating license. Witnesses have identified on-site criminal misconduct including diversion of nuclear materials to underground businesses that sell belt-buckles manufactured on-site. Witnesses have also provided affidavits detailing widespread illegal gambling including horse-racing bets placed from the security guard's desk on the seventh floor where nuclear fuel is kept. Dangerous alcohol and narcotics use on-site further demonstrates CG&E's abdication of its duties. (See, *e.g.*, a January 16, 1981 affidavit from Jeffrey Hyde, attached and incorporated herein as Exhibit 14.)

The above overview helps explain why previous QA/QC retaliation and failure to respond adequately to identified deficiencies continues to date. The same management organizations are making the decisions. Through the CG&E-led Quality Confirmation Program, RIII in effect may have ordered the fox to strengthen its control over the henhouse. It is imperative that an operating license not be granted without a full hearing into Applicant's character and competence.

The basis for this contention is the OIA Report at 33-5; IE Report in general; and documentation, affidavits and interviews with witnesses willing to testify at hearings.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Herbert Grossman, Chairman
Dr. Frank F. Hooper
Gustave A. Linenberger

In the Matter of

Docket No. 50-395-OL

SOUTH CAROLINA ELECTRIC AND
GAS COMPANY, *et al.*
(Virgil C. Summer Nuclear Station,
Unit 1)

July 20, 1982

In this Partial Initial Decision the Licensing Board resolves the seismic issues in controversy in favor of plant safety concluding that the seismic safety of the Summer Nuclear Plant will be assured if the operating license is made subject to two conditions: (1) that seismic monitoring be continued at least until December 31, 1983, and that the NRC Staff reevaluate at that time the need for further monitoring; and (2) that Applicants successfully complete within the first year of operation a confirmatory program to demonstrate to the NRC Staff's satisfaction that explicit safety margins exist for each component necessary for shutdown and continued heat removal in the event of the maximum potential shallow earthquake.

TECHNICAL ISSUES DISCUSSED

Reservoir-induced seismicity
Occurrence after impoundment
Shallow earthquakes and near-source earthquakes

Ground motion
Peak accelerations
Amplification from bedrock (soil, topographical, soil-pad interaction)
Response spectra
Theoretical models and empirical data
Magnitude potential
Deep vs. shallow earthquakes
Source dimension
Deviatoric stress
Seismic structural capacity
Engineered structures
Equipment and components
Natural frequencies and reduction of motion (imbedment of foundation)

APPEARANCES

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On behalf of the Intervenor:

Brett Allen Bursey, *pro se*, Little Mountain, South Carolina

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PARTIAL INITIAL DECISION

(Seismic Issues)

I. INTRODUCTION

This matter is a contested operating license proceeding within the meaning of 10 CFR §2.4(n). This partial initial decision considers the application for issuance of a facility operating license to the South Carolina Electric & Gas Company ("SCE&G") and the South Carolina Public Service Authority ("SCPSA") (hereinafter "Applicants") to authorize the operation of the Virgil C. Summer Nuclear Station, Unit 1. The facility consists of a single pressurized water reactor located on SCE&G's site in Fairfield County, South Carolina. The reactor is designed to operate at core power levels up to 2785 thermal megawatts, with a net electrical output of approximately 900 megawatts. The facility is adjacent to Monticello Impoundment, an SCE&G-owned and operated pumped storage hydroelectric project (Federal Energy Regulatory Commission Project 1894), about one mile east of the Broad River and approximately twenty-six (26) miles north-west of Columbia, South Carolina.

On June 30, 1971, SCE&G, then the sole Applicant, filed an application with the Atomic Energy Commission, now the Nuclear Regulatory Commission, for a permit to construct and operate the V. C. Summer Nuclear Station, Unit 1. Construction Permit No. CPPR-94 was issued on March 21, 1973, following reviews by the Commission's Regulatory Staff and the Advisory Committee on Reactor Safeguards, as well as public hearings before an Atomic Safety and Licensing Board in Winnsboro, South Carolina on January 29-30, 1973. LBP-73-11, 6 AEC 213 (1973); *aff'd*, ALAB-114, 6 AEC 253 (1973).

On May 17, 1974, SCE&G filed an application to amend its construction permit to add SCPSA as co-owner and co-licensee, having executed a sale of a one-third interest in the facility to SCPSA on October 18, 1973.

On April 18, 1977, the Commission published in the *Federal Register* (42 *Fed. Reg.* 20203) a notice of the receipt of an application by the Applicants for a facility operating license for the Summer facility. In response to that notice, Brett Allen Bursey ("Intervenor") filed a "Petition to Intervene" dated May 27, 1977. In that petition, Intervenor requested hearings. On June 8, 1977, this Atomic Safety and Licensing Board was established to rule on petitions to intervene. On July 15, 1977, the Board¹ issued an Order granting Mr. Bursey leave to intervene.² On

¹ Pursuant to Notice issued January 9, 1978, the Board was reconstituted to reflect appointment of Ivan W. Smith, Esq. to replace former Chairman Fredric J. Coufal, Esq. whose schedule did not allow him to continue in this case. Pursuant to Notice issued January 17, 1980, the Board was again reconstituted to reflect appointment of the current Chairman, Herbert Grossman to replace former Chairman Ivan W. Smith, Esq., whose schedule did not allow him to continue in this case.

² The intervention was granted over Applicant's objections as to timeliness and failure to submit a contention meeting the requirements of the NRC's regulations.

March 23, 1978, the Board issued a Memorandum and Order granting the State of South Carolina's March 10, 1978 petition to participate as an interested State pursuant to 10 CFR §2.715(c).

On March 23, 1981 an organization comprised of Fairfield County residents, Fairfield United Action ("FUA"), filed a petition for leave to intervene, to which it attached twenty-seven proposed contentions and their bases. Applicants and NRC Staff opposed the petition. On April 30, the Board granted the FUA petition and accepted ten (10) of its contentions for litigation. The ten accepted contentions related to two general subject matters — Applicants' management capabilities and adequacy of emergency planning efforts. Applicants and the NRC Staff appealed the Board's order admitting FUA. On June 1, 1981 the Atomic Safety and Licensing Appeal Board issued its decision reversing this Board's order insofar as it granted the intervention petition of FUA. ALAB-642, 13 NRC 881. The Commission chose not to review the Appeal Board's decision. On appeal to the D.C. Court of Appeals, ALAB-642 was later affirmed in an unpublished opinion.

This Partial Initial Decision involves only the seismic issues in controversy. A supplemental partial initial decision will be issued shortly covering the remaining issues. With regard to the seismic issues, the Board finds in favor of plant safety in the event certain conditions are met. They involve continued seismic monitoring and the successful completion during the plant's first year of operation of a confirmatory program involving seismic safety margins of plant equipment and components. If the other matters are resolved satisfactorily, the granting of the operating license will be made subject to these conditions.

II. OPINION

The major seismic issues relate to earthquakes induced by the impoundment of the Monticello Reservoir, which was created as part of a planned electric power generating complex. The Monticello Reservoir stores water for a pumped storage facility, provides cooling water for the nuclear plant, and serves as a make-up source for emergency cooling water. Find. 1.³

Filling of the reservoir began on December 3, 1977, and full pond elevation occurred on February 8, 1978. Prior to the filling of the reservoir the USGS seismograph station at Jenkinsville (3 miles east-southeast of the site) had recorded about one local low level earthquake every six days from 1974 to 1977. After impoundment of the reservoir the number of events had increased to several hundred per week. The largest earthquake at the Monticello Reservoir known to NRC Staff at the date of its February 1981 SER was the magnitude (M_L) 2.8 event

³ "Find." references are to the Board's Findings of Fact, *infra*.

that occurred on August 27, 1978. The earthquake occurred about a mile northwest of the plant at a depth of approximately 110 meters. Find. 2.

A U.S. Geological Survey strong motion accelerometer located about 640 meters southeast of the epicenter and within a mile of the Summer plant produced a strong motion record of the event. The record was significant because the peak horizontal acceleration of 0.25g exceeded the maximum horizontal ground acceleration for the safe shutdown earthquake (SSE) of 0.15g for rock foundations. This response spectra anchor point of 0.15g would be applicable to the main Summer facility which was built on rock. The SSE peak acceleration for structures founded on soil was 0.25g. Find. 3.

In addition to mentioning the actual exceedance⁴ of the design basis peak acceleration evident in the strong motion record of the 2.8 M_L event, Staff's SER reflected additional concerns. It indicated that there were conflicting estimates of expected magnitudes for future events, as follows (Find. 4): Applicants — 4.0; Staff — 4.5; ACRS — around 5; and differing opinion of Staff seismologist — 5.3. Higher magnitude earthquakes would be expected to produce higher peak ground accelerations.

Intervenor Bursey's original contention, submitted before the Monticello Reservoir was filled, referred to the possibility of reservoir-induced seismicity causing 5.0 magnitude earthquakes. As restated in the Board's Prehearing Conference Order of April 24, 1978, the contention reads as follows (Find. 5):

Contention A 4

- (a) The FSAR is inadequate with respect to the description of seismic activity in the area of the Summer plant site;
- (b) The plans for monitoring site seismicity are inadequate in that they do not consider the seismic effect of filling a reservoir. Site seismicity should be monitored for one year subsequent to filling the reservoir and prior to granting of the operating license.

At the final Prehearing Conference held on April 7 and 8, 1981, Intervenor Bursey submitted his summary of contentions in which he contended that a near-field magnitude of 5.3 should be used for assessing seismic safety. He also referred to the recently discovered Wateree Creek fault near the reactor as posing new seismic considerations that must be resolved prior to licensing. The Wateree Creek fault had been mapped and reported in 1980 and was the subject of some discussion in the February, 1981 SER, including the possibility of some association of the fault with the RIS (reservoir-induced seismicity). In addition to the RIS and the Wateree Creek fault, the SER also discussed the Charleston earthquake of 1886 which had been localized to the immediate Charleston area at the construction permit stage and was not assumed to migrate outside of that region for

⁴ The word "exceedance," although not found in standard dictionaries, is a statistical term that was used by the seismology experts throughout the hearing. See, e.g., Staff's reference to "high frequency exceedances." Staff's updated testimony, ff. Tr. 5758, at 4.

determining ground motion at the Summer site. *South Carolina Electric and Gas Co.* (Summer Nuclear Station, Unit 1), LBP-73-11, 6 AEC 213, 218 (1973). The February, 1981 operating license SER reexamined the evidence with regard to localizing the 1886 event to the immediate Charleston area and reaffirmed the construction permit conclusion. Find. 6.

In our unpublished Order of May 13, 1981 following the final prehearing conference (at 4-6), the Board permitted a "broadening" of Intervenor's restated contention in view of the changed situation (*i.e.*, the newly created RIS and the discovery of the Wateree Creek fault) since the contention was adopted, as discussed in the SER. We broadened the seismic contention to include all of the seismic considerations covered in the SER and extended the period during which Intervenor claimed the monitoring of seismicity should be continued until the end of 1983. Find. 7.

We might point out, however, that we did not intend to, nor did we, broaden the contention to include a *de novo* reexamination of matters determined at the construction permit stage or an examination of any other matter that could not fairly be considered as being covered by Intervenor's original contention as supplemented by the newly-discovered information contained in the SER. We did not go beyond the contention to consider matters under our *sua sponte* authority. Specifically, we considered all of the matters discussed in the SER relating to RIS and the Wateree Creek fault, and Intervenor's contention that the seismic monitoring should be continued through 1983, as an updating of his original contention in light of the new matters disclosed by the SER. With regard to the Charleston earthquake, we intended only to examine the "relation between the reservoir-induced seismicity and the Charleston tectonic earthquake" of 1886 (Remainder of Order Following Fourth Prehearing Conf., May 13, 1981, at 5), and to determine whether, as a preliminary matter, the knowledge acquired since the construction permit proceeding cast any doubt upon the reasonableness of the determination that the 1886 event should be localized to the Charleston area. We are satisfied that, even under critical Board examination, no evidence has been introduced that suggests that a *de novo* reexamination is advisable of the construction permit finding that the 1886 event can be localized to the Charleston area.⁵ See Tr. 919-23, 960, 1154-5.

⁵ Our opinion should not be read as implying agreement or disagreement with the conclusions of the construction permit board that the 1886 event should be localized to the Charleston area. We make no independent determination that the historical seismicity in the area (*i.e.*, the continuing focal mapping of low and moderate seismic events which appear to be concentrated around the local Charleston area) is sufficient, factually or legally, to establish that the 1886 event is "reasonably related to tectonic structures" in the local Charleston area so that that earthquake need not be migrated to the boundary of the Piedmont and Coastal Plain provinces near the site. See Part 100, Appendix A, V.(a)(1)(iii). We recognize that scientific opinion on localizing the 1886 event to Charleston is mixed now as it was at the
(Continued)

Applicants and Staff presented their initial seismic testimony from June 22 to 24, 1981. Intervenor and the State of South Carolina presented no evidence. Applicants, Staff and the differing Staff seismologist continued to disagree on the anticipated maximum event that they had set at 4.0 M_L , 4.5 M_L and 5.3 M_L , respectively. Applicants based their prediction of a maximum earthquake of $M_L = 4.0$ primarily on a model by Professor James Brune of the University of California at San Diego. Stf. Ex. 1 at 2-24; Applicants Exs. 2, 3, 4; Tr. 835-36. Although Applicants continued to disagree with the higher estimates of magnitude made by Staff, ACRS, and the differing Staff seismologist, they calculated peak ground accelerations for these higher magnitude events also through use of the Brune model in conjunction with formulas by Hanks and McGuire needed to adapt the Brune model to near-source earthquakes. That method depends on estimates of stress drop, seismic moment, shear wave velocity, density and attenuation. Using a constant stress drop of 25 bars, but varying the source distance with the increasing magnitude, Applicants determined zero-period accelerations (ZPA) for various magnitude earthquakes, as follows: 4.0 $M_L = 0.14g$ ZPA; 4.5 $M_L = 0.22g$ ZPA; 5.0 $M_L = 0.20g$ ZPA and 5.5 $M_L = 0.22g$ ZPA. Even though 0.22g ZPA exceeded the design basis acceleration of 0.15g for the Summer plant built on rock, Applicants attempted to demonstrate that the use of a 0.22g peak acceleration anchor point for response spectra derived from amplification ratios determined by Johnson and Traubenik and using the structural damping allowance of 7% under Regulatory Guide 1.61 would not exceed the original SSE spectrum calculated at 2% damping except in frequencies higher than 9 hertz (cycles per second). Acceptance of these exceedances could then be justified on the basis of certain built-in conservatisms used in the facility design. Finds. 8, 10, 11.

The maximum ZPA of 0.22g arrived at through the Hanks and McGuire adaptation of Brune model ("H-M model") had already apparently been exceeded at the strong motion accelerometer, which had recorded ground motion of 0.25g during a 2.8 M_L event on August 27, 1978. Applicants attributed that reading to amplification of motion in the 56-foot soil column underneath the strong motion accelerometer. The Applicants used deconvolution procedures to infer ground motion at bedrock of about half the value of the motion recorded at the surface. Their deconvoluted motion estimate of 0.130g and 0.106g for the two horizontal components for the August 27, 1978 event was found to compare well with a peak acceleration of 0.121g calculated for a similar magnitude event under the Brune model using a stress drop of 25 bars and a source-to-site distance of 1 kilometer. Find. 16.

construction permit stage. We determine only that the construction permit findings were reasonable in light of the information known then or now and that none of the new information raises sufficient concern to warrant reopening the issue.

Although Staff used methods other than the Brune model to calculate a maximum magnitude earthquake (and arrived at a 4.5 M_L compared to Applicants' 4.0 M_L), it relied exclusively on Applicants' H-M adaptation of the Brune model to determine peak ground acceleration. Furthermore, it concluded that Applicants had demonstrated that the ground motion was amplified in the soil column at the strong motion accelerometer site. Find. 17.

Applicants presented most of their case on seismicity⁶ and Staff presented and concluded its seismic presentation during the week of June 22, 1981. During the week of July 6, 1981 when the hearing was not in session, the Board informed the parties during a conference call that it intended to call independent experts as Board witnesses. At the hearing the following week, the Board confirmed this course of action. In response to a Staff request, the Board Chairman identified four areas of specific concern: (1) whether "the [g] values suggested for the different magnitudes have been fully substantiated by the testimony"; (2) whether "the application of those time histories pegged to these [g] values have been fully substantiated"; (3) whether there has been a "full enough discourse on the accelerometer readings at Jenkinsville"; and (4) "whether the Charleston earthquake ought to be migrated to the periphery of the Coastal province or the edge of the Piedmont province." Find. 19.

Several days later, the Licensing Board discussed these concerns further. Tr. 3790-3817. It focused on three principal issues: (1) peak acceleration (g) values for ground motion, (2) appropriate response spectra, and (3) earthquake magnitudes. The major portion of the Board's concern related to Staff's acceptance of Applicants' use of the Hanks and McGuire adaptation of the Brune model to determine the g values. It questioned whether Staff's review of Applicants' use of this model had been sufficiently critical with regard to whether that model was an appropriate one to use, and whether the proper values had been used as inputs in applying that model. Find. 20. The Board Chairman suggested that, in general, an applicant will try to find the best material and the best experts that support its case. Thus, if the Staff review had not been critical enough of Applicants' analysis, the Board could be handicapped in making its own determination. Tr. 3790-93.

The Board questioned whether the exclusive use of Applicants' ground motion model to determine the appropriate g values and the information used in the calculation (*i.e.*, stress drop, source diameter, etc.) was the "best kind of information to look at." The Board suggested that the Staff might also look at empirical data correlating ground motion with different magnitude earthquakes and might even find some "better data" to look at. Tr. 3793-94. The Board also indicated that

⁶ All that was left to be presented by Applicants on the seismic issue was some brief testimony to indicate that it would not be economically feasible to unload the Monticello Reservoir to test the seismic effects of unloading, and the recall of a witness to lay a further foundation for an exhibit that had been stricken for lack of foundation.

it expected the independent Board witnesses to update the strong motion figures at the Summer site by at least consulting with "the person who was responsible for the accelerometers at Jenkinsville." Find. 20.

As to the issue of migrating the Charleston earthquake to the perimeter of the Piedmont province, the Board indicated that it was in basic agreement with the arguments of Applicants' counsel (given at Tr. 2520-21) that this issue was resolved at the construction permit stage and would only become a question for the operating license proceeding if there were "any drastic change in the information since then." We did not see that matter as a "critical issue in the case." As indicated above, although the experts might differ on localizing a repetition of the 1886 event to the immediate Charleston area, there has been no drastic change in the information available to this Board over what was considered during the construction permit stage that would justify reopening the issue. Find. 21.

Staff objected to our calling the Board witnesses and petitioned for directed certification of that ruling. After extensive briefing by the parties, a series of issuances by the Appeal Board, and responses by us to those issuances (as directed by the Appeal Board), the Licensing Board was permitted to call its own experts after reviewing supplementary testimony filed by the Staff. A full discussion of the procedural aspects of our calling the Board witnesses is included as an Appendix, *infra*, to this initial decision.

Staff's supplemental testimony, received by us on September 15, 1981, reaffirmed Staff's reliance upon Applicants' ground motion model — the H-M adaptation of the Brune model to determine a peak acceleration anchor point on which to anchor the response spectra based upon amplification ratios of Johnson and Traubenik. Staff further reaffirmed the use of 25 bars of stress drop in the formula. Find. 23.

At the further seismic hearings held January 11-16, 1982, Applicants' ground motion model was shown to be unreliable. The 25-bar stress drop limitation based upon calculations made of the August 1978 event was shown to have been considerably exceeded in two subsequent events. For these events, stress drop could be reasonably calculated at from 37 to 100 bars, depending upon the exactness of the formula and the variations in parameters, such as cutoff frequency and digitization rate. The Board accepts as a best estimate for these events stress drops of approximately 60 to 65 bars. A doubling of stress drop would approximately double the resulting calculated ground acceleration. Furthermore, stress drops at Monticello were shown to be highly variable for different events, rather than stable as suggested earlier. As the further testimony disclosed, even in California where stress drops are considered to be *relatively* stable, they have been shown to increase with increasing magnitude within the magnitude range of interest. Finds. 27-29, 31-33, 110.

As to the response spectra based upon the amplification ratios of Johnson and Traubenik, Staff later reversed its position and considered them inappropriate for

the high frequency ground motion from shallow RIS, the only type of seismicity covered in the original evaluation. The Board agrees. Finds. 35, 82, 111.

The further seismic hearings in January of 1982 also did not establish any support for Applicants' position that the peak acceleration of 0.25g recorded at Monticello during the August 27, 1978 event had been amplified through the soil column. The evidence suggested that there was no amplification due to soil or topography. In addition, the record also disclosed a subsequent reading, on October 16, 1979, of 0.35g, which even further surpassed the SSE peak acceleration anchor point of 0.15g on rock. No amplification could be established for that reading, either. Finds. 25, 36-49, 112.

However, at the January 1982 hearings, other lines of evidence established the seismic safety of the nuclear power plant structures. Staff differentiated between normal tectonic depth earthquakes (occurring 5-16 km deep) at which a maximum 4.5 M_L earthquake might be expected, and shallow earthquakes occurring in the upper 3 km. For the normal tectonic depth earthquakes, empirical observations from historical earthquakes of peak accelerations and epicentral intensities, and response spectra derived from earthquakes at Mammoth Lakes and Oroville, California, establish ground motion limits within the SSE design basis parameters for both plant and equipment. Any postulated exceedances could easily be accommodated by conservatism in plant design and construction. Finds. 55-57, 63, 69-76, 78-79, 89, 92, 108, 113.

With regard to the shallow RIS, for which the Board accepts a maximum magnitude of 3.8 M_L , Staff has utilized the envelope of response spectra from data already recorded at Monticello to demonstrate that the ground motion from the maximum magnitude postulated event will exceed Applicants' SSE design response spectra only at frequencies greater than 10 hertz. Finds. 58-61, 64-65, 83-87, 114. For that reason, and based upon empirical observations with regard to epicentral intensities from other shallow earthquakes in the eastern United States, and from observations of damage from other earthquakes, Applicants and Staff have demonstrated that the maximum magnitude shallow earthquake will not damage the nuclear plant structures. Finds. 90-92, 114. However, because some of the safety-related equipment and components have natural frequencies above 10 hertz, and some of the systems and equipment are mounted on or near the foundation slab where they will experience high frequency motions transmitted directly through the slab, Applicants have committed themselves to reviewing the systems and equipment necessary for shutdown and continued heat removal to confirm that explicit safety margins exist for each component. The Board agrees that the review may take into account appropriate reductions of ground motion attributable to the embedment of the foundations in rock and that the Summer plant can commence operations prior to the completion of the confirmatory program. Finds. 93-97, 115. Considering that the evidence adduced failed to establish

amplification in the ground motion recordings due to soil, topography or accelerometer pad-soil interaction, the Board will not approve any reliance upon amplification factors in the confirmatory program based upon evidence produced here. Finds. 36-49, 115.

The Board found no evidence to indicate that the Wateree Creek fault poses any danger to the Summer nuclear plant. Finds. 102-105, 116. Nor did it find any evidence that would warrant reexamining the finding of the construction permit Licensing Board that the 1886 Charleston earthquake should be localized to the immediate Charleston area. Finds. 98-101, 117.

In view of the unreliability of the H-M model and the inappropriate application of the Johnson and Traubenik amplification ratios to shallow-earthquake, high-frequency motion, upon which the FSAR and SER relied, the Board agrees with Intervenor's contention that the FSAR was inadequate with respect to the description of seismic activity in the area of the Summer plant site. The Board had not even been notified, until October 20, 1981, of the 0.35g peak horizontal acceleration recorded at the October 1979 event. Find. 25. However, the inadequacies of the FSAR were cured by the extensive evidentiary record of this proceeding.

Historically, the largest magnitude earthquakes from reservoir-induced seismicity have occurred up to 10 years after the reservoir had been filled. In the Piedmont province, Lake Jocassee, South Carolina, experienced its largest earthquake of 3.7 M_L six years after impoundment. Find. 64. Accordingly, the Licensing Board agrees with Intervenor that site seismicity must be monitored at least until the end of 1983, which would be six years after impoundment. At that time, Staff should consider further monitoring as an additional licensing requirement.

The Board concludes that the seismic safety of the Summer Nuclear Plant will be assured if the operating license were made subject to two conditions: (1) that seismic monitoring be continued at least until December 31, 1983, the need for further monitoring to be reevaluated at that time; and (2) that Applicants successfully complete the confirmatory program during the first year of operation to demonstrate that explicit safety margins exist for each component necessary for shutdown and heat removal in the event of the maximum potential shallow earthquake.

III. FINDINGS OF FACT

A. Background and Issues

1. The major seismic issues relate to earthquakes induced by the impoundment of the Monticello reservoir, which was created as part of a planned electric power generating complex. The Monticello reservoir stores water for a pumped storage facility, provides cooling water for the nuclear plant, and serves as a make-up source for emergency cooling water. Stf. Ex. 1 (SER) at 2-21.

2. Filling of the reservoir began on December 3, 1977, and full pond elevation occurred on February 8, 1978. Prior to the filling of the reservoir the USGS seismograph station at Jenkinsville (3 miles east-southeast of the site) had recorded about one local low-level earthquake every six days from 1973 to 1977. After impoundment of the reservoir the number of events had increased to several hundred per week. *Id.* at 2-22; Tr. 1011-12. The largest earthquake at the Monticello reservoir known to NRC Staff at the date of its February 1981 SER was the magnitude (M_L) 2.8 event that occurred on August 27, 1978. The earthquake occurred about a mile northwest of the plant at a depth of approximately 110 meters. *Stf. Ex. 1* at 2-27; Tr. 5197-98.

3. A U.S. Geological Survey strong motion accelerometer located about 640 meters southeast of the epicenter and within a mile of the Summer plant produced a strong motion record of the event. The record was significant because the peak horizontal acceleration of 0.25g exceeded the maximum horizontal ground acceleration for the safe shutdown earthquake (SSE) of 0.15g for rock foundations. This response spectra anchor point of 0.15g would be applicable to the main Summer facility which was built on rock. *Id.* at 2-20, 2-27; Tr. 898-901. The SSE peak acceleration for structures founded on soil was 0.25g. *Ibid.*

4. In addition to mentioning the actual exceedance of the design basis peak acceleration evident in the strong motion record of the 2.8 M_L event, Staff's SER reflected other concerns. It indicated that there were conflicting estimates of expected magnitudes for future events, as follows: Applicants — 4.0; Staff — 4.5; ACRS — around 5; and differing opinion of Staff seismologist — 5.3. *Stf. Ex. 1* at 2-24 to 2-25; *Stf. Ex. 1(a)* at Appendix D. Higher magnitude earthquakes would be expected to produce higher peak ground accelerations.

5. Intervenor Bursey's original contention, submitted before the Monticello reservoir was filled, referred to the possibility of reservoir-induced seismicity causing magnitude 5.0 earthquakes. Clarification to Petition to Intervene, August 19, 1977, par. 7. As restated in the Board's Prehearing Conference Order of April 24, 1978, the contention read as follows:

Contention A 4

- (a) The FSAR is inadequate with respect to the description of seismic activity in the area of the Summer plant site;
- (b) The plans for monitoring site seismicity are inadequate in that they do not consider the seismic effect of filling a reservoir. Site seismicity should be monitored for one year subsequent to filling the reservoir and prior to granting of the operating license.

6. At the final prehearing conference held on April 7 and 8, 1981, Intervenor Bursey submitted his summary of contentions in which he contended that a near-field magnitude of 5.3 should be used for assessing seismic safety. He also referred to the recently discovered Wateree Creek fault near the reactor as posing

new seismic considerations that must be resolved prior to licensing. Inter. Summary of Contentions at 3-4. The Wateree Creek fault had been mapped and reported in 1980 and was the subject of some discussion in the February, 1981 SER, including a possibility of some association of the fault with the reservoir-induced seismicity (RIS). Stf. Ex. 1 at 2-19 to 2-20, 2-26 to 2-27. In addition to the RIS and the Wateree Creek fault, the SER also discussed the Charleston earthquake of 1886 which had been localized to the immediate Charleston area at the construction permit stage and was not assumed to migrate outside of that region for determining ground motion at the Summer site. *South Carolina Electric and Gas Co.* (Summer Nuclear Station, Unit 1), LBP-73-11, 6 AEC 213, 218 (1973). The February, 1981 operating license SER reexamined the evidence with regard to localizing the 1886 event to the immediate Charleston area and reaffirmed the construction permit conclusion.

7. In our Order following the final prehearing conference (at 4-6), the Board permitted a "broadening" of Intervenor's restated contention in view of the changed situation (*i.e.*, the newly created RIS and the discovery of the Wateree Creek fault) since the contention was adopted, as discussed in the SER. We broadened the seismic contention to include all of the seismic considerations covered in the SER and extended the period during which Intervenor claimed the monitoring of seismicity should be continued until the end of 1983.

B. Applicants' Use of the Brune Model

8. In its submittals to Staff and its presentation to the Licensing Board at the initial hearings on seismicity held June 22-24, 1981, Applicants relied primarily upon a model by Professor James Brune of the University of California at San Diego to predict a maximum magnitude earthquake at the site of $M_L = 4.0$. Applicants also used the Brune model to determine peak acceleration. This model depends on estimates of stress drop, seismic moment, shear wave velocity, density and attenuation. Stf. Ex. 1 at 2-24, 2-30; Tr. 861. One of the critical parameters used by Applicants in applying the Brune model was a maximum assumed stress drop of 25 bars, based upon a calculation by Fletcher of the USGS that the maximum stress drop for the August 1978 earthquake was 17 bars. Another critical parameter was the assumed maximum dimension of geological structures within the immediate vicinity of the reservoir, assumed to be 1 km or less. Stf. Ex. 1 at 2-24 to 2-25; Stf. Ex. 2.

9. Staff's consultant from the LASL, Dr. Karl Newton, and the Advisory Committee on Reactor Safeguards, independently of the Brune model, estimated the maximum reservoir-induced earthquake at Monticello to be $M_L 4.5$ and around 5, respectively. Stf. Ex. 1 at 2-24; Stf. Ex. 1a at D. Applying the Brune model, but using inputs of a stress drop of 100 bars and a source dimension of 3.2 km (length of the clusters of seismic activity), Dr. Andrew Murphy of the NRC Office of

Nuclear Regulatory Research arrived at a possible event of magnitude 5.3 M_L in the immediate vicinity of the reservoir. Stf. Ex. 1 at 2-24 to 2-25.

10. Because there are so few near-field ground motion data containing peak accelerations, the applicants used the Brune model as a basis for their theoretical calculations for the $M_L = 4.0$ maximum earthquake they predicted and for the larger magnitude earthquakes predicted by Staff and the ACRS. Since the Brune model is a far-field model, the Applicants used an extension of this model proposed by Hanks and McGuire (H-M model) to adjust it to the near field. Staff updated testimony, ff. 5758, at 28-29, 42. Using a stress drop of 25 bars, Applicants determined zero-period acceleration (ZPA) values of 0.14g for an $M_L = 4.0$ event at a source distance 2.0 km; of 0.22g for a $M_L = 4.5$ event at 2.0 km; of 0.20g for a $M_L = 5.0$ event at 3.0 km; and 0.22g for a 5.5 M_L event at 4.0 km. The increase in source distance with increase in assumed magnitude was attributable to the assumption that a higher magnitude earthquake would require a larger source dimension and hence would occur deeper and farther from the plant site. Appl. Ex. 2, 3, 4; Tr. 1138.

11. Even though the 0.22g ZPA exceeded the design basis acceleration of 0.15g for the Summer plant built on rock, Applicants attempted to demonstrate that the use of a 0.22g acceleration used as an anchor point to appropriate response spectra would not exceed the original safe shutdown earthquake spectra anchored to 0.15g. Applicants derived response spectra from the Hanks and McGuire model estimate of peak acceleration using amplification ratios determined by Johnson and Traubenik to estimate peak velocity and peak displacement. Johnson and Traubenik had examined records in the M_L range of 4.7 to 6.5 recorded at rock sites at distances of 2 to 7 km from earthquake faulting and had derived amplification ratios at close distances as a function of magnitude. The Applicants considered these preferable to the Regulatory Guide 1.60 spectrum which is derived from a composite of strong motion records recorded mostly from earthquakes greater than $M_L = 6.0$ and at different distances out to 100 km. The Regulatory Guide 1.60 spectrum does not attempt to differentiate between site conditions, different magnitudes or distance ranges. Stf. Ex. 1 at 2-30; Stf. Suppl. Testimony, ff. 5758, at 34; RM-1, ff. Tr. 5042. Regulatory Guide 1.60 itself (at footnote 2) indicates that it does not apply to sites which 1) are relatively close to the epicenter of an expected earthquake or 2) which have physical characteristics that could significantly affect the spectral combination of input motion.

12. Applicants' original SSE design spectrum anchored at 0.15g was derived from studies by Newmark and Hall and differed slightly from the response spectra in Regulatory Guide 1.60. Tr. 879-880; Stf. Ex. 1 at 2-20. A 2% damping value was used. As a result of the reservoir-induced seismicity, a comparison was made between the new spectra based upon the amplification values of Johnson and Traubenik for 5 to 7% of critical damping, with the original design spectrum for 2% damping. It was found that the 2% SSE spectrum was exceeded only in the

frequency range greater than 9 hertz. Chen, ff. Tr. 5324, at 5-6; Stf. Ex. 1a at 3-2. Subsequent to the original analysis, Regulatory Guide 1.61 was issued. It allows a 5% damping value for prestressed concrete and a 7% value for reinforced concrete structures in the seismic analysis. *Ibid.*

13. The internal concrete structures have fundamental frequencies higher than 9 hertz, which is in the frequency range where the original design spectrum falls below the new spectra values. For this reason, the Applicants generated a new time history input motion using the Oroville, California earthquake as a basis, and scaled that up to a 0.22g peak value. It was found that the new floor response spectra based on the adjusted Oroville earthquake time history did not exceed corresponding floor response spectra for the facility design. Similar comparisons were made for equipment and systems, and demonstrated that the new spectra were bounded by the original design spectra except in some cases in the 20-30 hertz range. The exceedances in this frequency range were then found acceptable on the basis of certain built-in conservatisms used in the facility design. *Ibid.*

14. Dr. Andrew Murphy of the NRC Staff differed with the Applicants' and official Staff positions on the magnitude of the maximum reservoir-induced earthquake at the Monticello reservoir. Although he did not personally consider the Brune model to be as reliable as other models that could be used for determining a maximum magnitude reservoir-induced earthquake, he used the Brune model for his calculations. His differences with the Applicants related to their use of a 1 km source dimension and 25 bars of stress drop. He explained that the use of 25 bars of stress drop in Applicants' calculations was justified on the basis of a 17-bar stress drop calculation for the August 27, 1978 earthquake by a member of the USGS who had apparently updated his results to show that the stress drop was about 17 bars on one horizontal axis and around 90 bars on the other horizontal axis. He also relied upon the length of the clusters of seismic activity of 3.2 km as a source dimension. Using 100 bars as a stress drop (to conservatively reflect the range of 17 to 90 bars calculated for the August 1978 event) and the 3.2 km source dimension, he arrived at a magnitude (M_L) 5.3 event as possible in the immediate vicinity of the reservoir. Stf. Ex. 1 at 2-24 to 2-25; Stf. Ex. 2; Tr. 1063-65, 1205.

15. At the opening seismic hearings held from June 22-24, 1981, the Licensing Board examined Applicants' and Staff witnesses in depth concerning the use of the Brune model and the critical parameter of 25 bars of stress drop used in Applicants' calculations. In particular, some of the Board questions were very critical with regard to: Applicants' maintaining a constant stress drop with an increase in magnitude; the historical observations that might support the 25-bar figure; the lack of correlation of the 25-bar figure with the higher deviatoric stress observed in the boreholes at the Summer site; the possibility of variability of stress drop with location at the Summer site; the Staff's basis in the literature and historical observations for accepting a constant of stress drop throughout a range of magnitude; the variability of the stress drop in relation to a change in source

diameter; and the representative nature of the Brune model for use in the eastern United States in view of the reliance upon empirical data from California to China. Tr. 861-77, 933-37, 940-46, 971-74, 1004-07, 1018-19, 1122-34, 1136-37, 1186-90, 1207-13, 1221-22.

16. The maximum ZPA of 0.22g arrived at through the H-M adaptation of the Brune model had already been exceeded at the strong motion accelerometer, which had recorded ground motion of 0.25g during a 2.8 M_L event on August 27, 1978. Applicants attributed that reading to amplification of motion in the 56-foot soil column underneath the strong motion accelerometer. Applicants used deconvolution procedures to infer ground motion at bedrock of about $\frac{1}{2}$ the value of the motion recorded at the surface. Their deconvoluted motion estimate of 0.130g and 0.106g for the two horizontal components for the August 27, 1978 event was found by Staff to compare well with a peak acceleration of 0.121g calculated for a similar magnitude event under the H-M model using a stress drop of 25 bars at a source-to-site distance of 1 km. Stf. Ex. 1 at 2-28, 2-30; Tr. 1157.

17. Although Staff used methods other than the Brune model to calculate a maximum magnitude earthquake (and arrived at a 4.5 M_L compared to Applicants' 4.0 M_L), it relied exclusively on Applicants' application of the H-M model to determine peak ground acceleration. Furthermore, it concluded that Applicants had demonstrated that the ground motion was amplified in the soil column at the strong motion accelerometer site. Stf. Ex. 1 at 2-27 to 2-31; Stf. Ex. 1 at 2-27 to 2-31; Stf. Ex. 1(a) at 3-2.

18. During the opening seismic sessions, the Licensing Board questioned Applicants' and Staff's witnesses with regard to this area. We questioned critically the ground motion figures actually recorded near the site (Tr. 757-63), and the basis for Staff's acceptance of Applicants' theory that there had been an amplification of ground motion from bedrock to the Jenkinsville accelerometer because of soil and topographical characteristics (Tr. 1141-46).

19. Applicants presented most of their case on seismicity, and Staff presented and concluded its seismic presentation during the week of June 22, 1981. During the week of July 6, 1981 when the hearing was not in session, the Board informed the parties during a conference call that it intended to call independent experts as Board witnesses. At the hearing the following week, the Board confirmed this course of action. Tr. 2512. In response to a Staff request, the Board Chairman identified four areas of specific concern to him: 1) whether "the [g] values suggested for the different magnitudes have been fully substantiated by the testimony"; 2) whether "the application of those time histories pegged to these [g] values had been fully substantiated"; 3) whether there has been a "full enough discourse on the accelerometer readings at Jenkinsville"; and 4) "whether the Charleston earthquake ought to be migrated to the periphery of the Coastal province or the edge of the Piedmont province." Tr. 2514-15.

20. Several days later, the Licensing Board discussed these concerns further. Tr. 3790-3817. It focused on three principal issues: 1) the g values for ground acceleration, 2) the application of response spectra, and 3) earthquake magnitudes. Tr. 3790. The major portion of the Board's concern related to Staff's acceptance of Applicants' use of the Hanks and McGuire adaptation of the Brune model to determine the g values. We questioned whether Staff's review of Applicants' use of this model had been sufficiently critical with regard to whether that model was an appropriate one to use, and whether the proper values had been used as inputs in applying that model. Tr. 3790-93. The Board questioned the exclusive use of the Brune model to determine the appropriate g values and whether the information used in the calculation (*i.e.*, stress drop, source diameter, etc.) was the "best kind of information to look at." Tr. 3793. The Board also indicated that it expected the independent Board witnesses to update the strong motion figures at the Summer site by at least consulting with "the person who was responsible for the accelerometers at Jenkinsville." Tr. 3799.

21. As to the issue of migrating the Charleston earthquake to the perimeter of the Piedmont province, the Board indicated that it was in basic agreement with the argument of Applicants' counsel (given at Tr. 2520-21) that this issue was resolved at the construction permit stage and would only become a question for the operating license proceeding if there were "any drastic change in the information since then." Tr. 3798. We did not see that matter as a "critical issue in the case." *Ibid.* As we find below, although the experts might differ on localizing a repetition of the 1886 earthquake to the immediate Charleston area, there has been no drastic change in information available to this Board over what was considered during the construction permit stage that would justify reopening the issue.

22. On August 7, 1981, Staff filed a petition for directed certification seeking to restrain the Licensing Board from calling Board witnesses without first affording the Staff the opportunity to respond to the Board's concerns. Subsequently, Staff informed the Appeal Board that it would file supplemental testimony addressing these concerns on or about September 15, 1981. On August 27, 1981, the Appeal Board issued a memorandum indicating that it expected the Licensing Board to review Staff's supplemental testimony when received, and, that if the Licensing Board were still of the view that it could not resolve the seismic issue on the basis of the evidence adduced by the parties themselves, to provide the Appeal Board with its reasons.

23. On September 15, 1981, Staff filed its supplemental seismic testimony. It reviewed Applicants' ground motion model (the H-M adaptation of the Brune model, together with the Johnson and Traubenik amplification ratios) and the input parameters for the model and found it reasonable for Applicants to use this model to predict near-field ground motions. Supplemental testimony at 33. Staff indicated that the most important parameters in Applicants' model were stress drop and source dimension. It found that Applicants' choice of 25 bars of stress drop

was conservative and that the source dimensions used in the model were reasonable. *Id.* at 24, 33.

24. On October 15, 1981, the Licensing Board issued a memorandum and order, LBP-81-47, 14 NRC 865, reaffirming its intention of calling seismology experts as Board witnesses. On October 19, 1981, the Appeal Board denied Staff's petition for directed certification thereby permitting the Licensing Board to proceed with calling its own expert witnesses at a further hearing on the seismic issues.

25. On October 20, 1981, Staff notified the Licensing Board by Board Notification (BN-81-32) of a significant earthquake that had occurred on October 16, 1979 that had not been reported to the Board. The accelerometer data from that event indicated that there had been peak accelerations recorded of 0.35g, 0.36g and 0.18g for the two horizontal and one vertical components, respectively, dwarfing the 0.25g recording of the August 27, 1978 earthquake.

26. In its October 15, 1981 Memorandum and Order, LBP-81-47, *supra*, the Licensing Board had also ordered that Staff file further written testimony, to be presented at further hearing, responding in full to the Board experts' reports which had been received in September of 1981. Because of the "new" seismic information contained in the Board notification of October 20, 1981, and the pendency of certain soil tests being conducted by Applicants to determine the extent of any amplification in the Jenkinsville accelerometer recordings due to the location of that accelerometer, the Staff's time for filing the further testimony was extended until December 31, 1981. The testimony was filed on that date and was subsequently received in evidence at the further seismic hearings held January 11-16, 1982, following Tr. 5758.

27. In its updated supplemental testimony on seismicity, Staff reexamined its acceptance of Applicants' choice of 25 bars as the appropriate stress drop in the H-M adaptation of the Brune model. It based its reexamination upon new information available to it. The most important of the new information was the calculation made by Applicants of the average rms stress drops for the six events recorded at Monticello which had significant ground motion. The Staff recalculated Applicants' stress drop figures to eliminate Applicants' reduction factor for soil amplification and arrived at stress drops for the six events of approximately 12, 19, 23, 42,⁷ 7 and 48 bars. Staff concluded that 50 bars is the appropriate rms stress drop to use in conjunction with the H-M application of the Brune model. Staff updated testimony, ff. 5758, at 32-34. Staff also indicated that, because of the lack

⁷ Staff erred in its recalculation of an October 27, 1978 event of $M_L = 2.4$ and should have arrived at a figure of 46 bars, rather than 42 bars. See Appl. Ex. 43 at 5, Table 4. Applicants had earlier calculated a stress drop of 65 bars for that event. McGuire's Evaluation of Joyner-Fletcher Report, ff. Tr. 5075, at Table 1. Presumably under the Joyner-Fletcher method of calculating stress drop, the figure would be even higher than 65 bars.

of data and understanding associated with eastern U.S. earthquakes, it becomes “problematic” to determine the values for stress drop, or even to assume a constancy with increasing magnitude, for stress drop in the eastern U.S. and, in particular, for eastern RIS. *Id.* at 30-31.

28. In its updated supplemental testimony, Staff concluded that Applicants’ model is physically reasonable but needs to be treated with caution and, when possible, should be used in conjunction with other approaches. *Id.* at 35. At the further hearing, however, Staff’s main seismology witness, Dr. Leon Reiter, retreated considerably from any reliance upon Applicants’ model. After hearing the bulk of the testimony, he concluded that it was not possible to come to any definitive results using Applicants’ model or to determine which parameters (*i.e.*, which values of stress drop and source diameter) are to be used in applying the model. He recommended that the Board look at other approaches. Tr. 5804.

29. Board witness Dr. William Joyner testified that he and his USGS colleague, Dr. Fletcher, had calculated average rms stress drops for the August 1978 event of 32 and 25 bars (for the two horizontal components) and for the October 1979 event an average of 60 bars. Joyner summary, ff. Tr. 4696, at 3; Tr. 4824. Board witness Dr. Enrique Luco calculated a stress drop from the August 1978 event of 100 bars. Tr. 4730; Luco report, ff. 4731, at 4-5. He believed that Applicants had used erroneous formulas in arriving at their figures. He repeated the Joyner and Fletcher calculation of stress drop for the October 1979 event and arrived at over 60 bars.⁸ Tr. 4966-67, 4978. Even Applicants’ chief seismology witness, Dr. Robin McGuire, an architect of the H-M adaptation of the Brune model, testified that, if soil amplification factors are not taken into account, the stress drop for the August 1978 event would be on the order of 25 bars and, for the October 1979 earthquake, on the order of 50 or 60 bars. He also calculated a stress drop of 65 bars for an October 27, 1978 event. Moreover, he estimated uncertainties in calculating stress drops even in California where stress drops are relatively stable, as being on the order of a factor of 2, plus or minus 1 standard deviation. Tr. 5559-60; McGuire’s Evaluation of Joyner-Fletcher Report, ff. 5075, at Table 1. If stress drop is increased by a factor of 2 in Applicants’ model, the resultant acceleration would be doubled. Tr. 5922.

⁸ The Joyner-Fletcher-Luco calculation of stress drop of between 60 and 65 bars for the October 1979 event, which was essentially unchallenged by Applicants, was based upon a moment magnitude calculation. Tr. 4815. If that moment magnitude stress drop calculation were converted to a local magnitude (M_L) calculation, as Staff converted Applicants’ original stress drop figure, the resulting stress drop would be approximately 85 bars for that event of $M_L = 2.8$ and moment magnitude = 3.1. See Appl. Ex. 43 at Tables 3, 4. In the Board’s opinion, it would make more sense to use a moment magnitude stress drop in a calculation based upon seismic moment. Staff’s decision to use an M_L calculation was undoubtedly attributable (perhaps unnecessarily) to the definition in Appendix A to Part 100 of “magnitude” as meaning the numerical value on a Richter scale. Local magnitude (M_L) is a Richter scale; moment magnitude is not. We do not interpret that definition as requiring that every calculation must be based upon a Richter scale, although Staff may be justified in converting to Richter units early in the calculation for the sake of accuracy.

30. In the original seismic hearing Applicants' witness Dr. Alexander testified that the maximum deviatoric stress observed in two boreholes at the Summer site was on the order of 100 bars, that the average stress drop that might be released in an earthquake would be in the range of 20%, and that therefore a release of 20 to 25 bars could be expected. Tr. 991-92. At the further hearing in January, 1982, that same witness testified that, in a situation such as at the Monticello reservoir where the pore pressures are high because of the reservoir, all of the deviatoric stress (on the order of 100 bars in some locations) could be released during an earthquake. Tr. 5097-99, 5108.

31. At the original hearing, Applicants offered evidence that there is no general increase of stress drop with magnitude, at least over a range of 2 or 3 magnitude units. Appl. Ex. 4 at 4. This assumption, that stress drop remains fairly constant over a range of magnitudes, was a critical factor in Staff's acceptance of Applicants' model. Tr. 1127-31, 1221-22. At the further hearing in January, 1982, it was disclosed that Applicants' major witness on eastern United States earthquakes, Dr. Otto Nuttli, had concluded that in the east, in contrast to the west, stress drop will increase with magnitude. Staff updated testimony, ff. 5758, at 33. Other seismologists have shown that even in California, where stress drop is relatively constant, stress drop in the Mammoth Lakes region increases steadily with magnitude for magnitudes less than about 3.4, although it is fairly constant for larger earthquakes. *Ibid.*

32. The H-M adaptation of the Brune model is based upon observations of California earthquakes. Hanks and McGuire have found that their equation for peak acceleration gives adequate results in California if a constant stress drop of 100 bars is used, regardless of the actual stress drop measured or calculated for that event. Staff updated testimony, ff. 5758, at 29; Luco report, ff. 4731, at 2.

33. Based on the foregoing paragraphs, the Board finds that the H-M adaptation of the Brune model cannot be relied upon to predict peak accelerations from future events at the Monticello reservoir. On the basis of the evidence adduced, one cannot even determine rms stress drop, appropriate for ground motion calculations, for the two most significant events that had occurred at the Monticello reservoir, the August 1978 and October 1979 earthquakes. The estimates for these two events range from 17 bars to 100 bars. Our best estimate of the rms stress drop would be in the range of 25 to 30 bars for the August 1978 event and from 60 to 65 bars for the October 1979 event, both of which were at an estimated magnitude of $M_L = 2.8$. We estimate an rms stress drop for an October 27, 1978 event of between 50 and 65 bars where the magnitude was estimated at $M_L = 2.4$. Because of the evidence that stress drop in the eastern United States generally increases with magnitude and that even in some California areas it increases with magnitude below magnitude 3.4, we cannot even accept the 60-65 bar range of the October 1978 and October 1979 events as a conservative figure for higher magnitude shallow events at the Monticello reservoir. We would also have to consider the

possibility of a 100-bar stress drop if we were to rely upon the H-M model, which we expressly decline to do.

34. With regard to Applicants' use of the Brune model to estimate maximum magnitudes in which Applicants used a source dimension of 1.0 km, questions posed by the Board's experts failed to reveal any support in the literature or engineering practice for the quantitative limit of 1 km at the Monticello reservoir, or for using the Brune model to determine the largest seismic event that could occur at a site on which to base an engineering judgment. Furthermore, Applicants' main expert in this area, Dr. Sheldon Alexander, conceded that once a rupture had begun the fracture could propagate beyond the stress field into a stress-free region to, perhaps, double the rupture radius. Nor could he even rule out the possibility of rupture on multiple fault planes in a single earthquake event (such as an echelon faulting), that would permit a release of higher energy (and hence result in a higher magnitude earthquake) within the limited source dimension. Tr. 5101-15. Moreover, the *in situ* stress measurements and 1 km source dimension used to apply the Brune model to determine maximum magnitude, were based upon measurements in two boreholes that were 700 meters and 900 meters deep. There was no way of knowing what was below those holes or anywhere else in the vicinity of the site. Tr. 5904.

35. In its SER and at the opening seismic hearings, Staff did not question Applicants' use of ground motion ratios of Johnson and Traubenik to construct response spectra anchored to the peak acceleration values determined from the H-M application of the Brune model. See Stf. Ex. 1 at 2-30. These Johnson and Traubenik amplification values are lower than those used in Regulatory Guide 1.60. Tr. 5599. At the further hearing held in January of 1982, Staff expressed considerable reservations about the Johnson and Traubenik amplification ratios. Because they were derived from records in the M_L range of 4.7 to 6.5, at epicentral distances of from 2 to 17 km, and were filtered at 20 hertz to exclude higher frequencies, Staff questioned whether they were applicable to high frequencies generated within several kilometers of the source. Staff concluded that for small magnitudes and for distances within several kilometers, the Johnson and Traubenik amplification factors are not tested and do not take into account high frequencies (20 hertz or more). Staff updated testimony, ff. Tr. 5758, at 34-35. The Board agrees with Staff (*id.* at 41-42) that, in view of the high frequency motion, low magnitudes (less than the lowest magnitude earthquakes taken into account by Johnson and Traubenik), and small hypocentral and epicentral distances anticipated, the Johnson and Traubenik amplification ratios are inappropriate for the shallow RIS expected at Monticello reservoir.

C. Amplification of Ground Motion

36. In its submittals to Staff and at the original hearing, Applicants argued that the peak acceleration at the Monticello reservoir known at that time, of 0.25g for the August 27, 1978 event, had been amplified in the 56-foot soil column below the strong motion accelerometer. Staff found that the Applicants had demonstrated that ground motion had been amplified in the soil column and that such amplification would not occur at the plant site, where most of the foundations are on bedrock. Stf. Ex. 1 at 2-28 to 2-29; Tr. 760-64. Prior to the further hearings held in January of 1982, Applicants conducted theoretical studies and field tests to determine whether there had been ground motion amplification at the USGS strong-motion accelerometer location for the peak instrumental accelerations of 0.25g and 0.35g for the August 1978 and October 1979 events. The purpose of these studies was to see the effect of the soil on the records obtained at the dam abutment, not to input something into the plant. Tr. 5576.

37. Applicants conducted a theoretical soil modelling study to demonstrate the ground motion amplification at the accelerometer site. The primary concern was whether the surface motion had been amplified as it propagated from the underlying bedrock. If amplification occurred, peak accelerations within bedrock would be less than recorded at the instrument location. Martin testimony, ff. Tr. 5522, at 1.

38. Applicants' expert performing the analyses, Dr. Geoffrey Martin, concluded that all cases have amplification ratios greater than 1.0, and that they range from 1.4 to 2.9. *Id.* at 11. Somewhat inconsistently, he further concluded that the amplification ratio at high frequencies (*i.e.*, the frequencies at which peak accelerations were recorded for the August 1978 and October 1979 events) is approximately 1.0. *Id.* at 13-14. He further testified that with regard to earthquakes such as occurred at the Monticello reservoir, at the peak accelerations in the 20 to 25 hertz range, there would be no significant amplification. Tr. 5538-41, 5569-74. Later, Dr. Martin admitted in response to questions posed by Board witness Trifunac that, for the models used in the soil study at greater than 20 hertz, the function would be less than 1, indicating that there could have been deamplification in the Monticello readings from bedrock to the accelerometer. Tr. 5667-70. Dr. Trifunac testified that the results of that study could be used to support the position that ground motion in the 20 to 35 hertz range could have been deamplified by a factor of 2 in the strong motion recordings at Monticello, although he (Dr. Trifunac) was not in favor of any reliance upon that study. Tr. 5671-73, 5675.

39. The event that was modelled by Dr. Martin was not similar to the events that had occurred at Monticello. Rather, it was a representation of a generic event of magnitude 4.0 with a hypocentral distance of 3 km, at a depth of 2 km. Since there was no 4.0 magnitude event at 3 km available, Dr. Martin scaled an Oroville

1975 aftershock with a magnitude of 4.6 and a 15 km hypocentral distance. This Oroville earthquake had a dominant frequency band in the range of around 10 hertz, in contrast to the 20 to 25 hertz dominant frequency band for the Monticello earthquakes. Dr. Martin admitted that the earthquake modelled was not representative of Monticello and that any amplification effect for the peak accelerations at the August 1978 Monticello event from the soil column was not significant. Tr. 5532, 5535-36, 5668-70.

40. Applicants' soil modelling study was based upon a program originally developed by Board witness Dr. William Joyner. Testimony of Martin, ff. 5522, at 4. At the beginning of the hearing session in January of 1982, Dr. Joyner tentatively accepted Applicant's amplification factor of 2. Tr. 4702-03, 4713-14. However, he requested additional information from Dr. Martin to reach a final conclusion. Tr. 4769-72. Upon receiving that information, Dr. Joyner concluded that he could not accept any amplification factor based on Applicants' model. He explained that because the events were shallow the seismic ray from the focus of the earthquake to the instrument site would be almost horizontal and would not likely be amplified. Tr. 4980, 5386-88, 5399-5404, 5662-63, 5731-32. He indicated that the other Board witnesses (Drs. Luco and Trifunac) and the Staff did not accept the amplification in the first place. Tr. 5391-93, 5731-32. The Board agrees with Dr. Joyner that the soil modelling study has not demonstrated that any amplification due to the soil column was involved in the August 1978 and October 1979 records of ground motion at the dam abutment site.

41. All of the witnesses, including Applicants' witnesses, have agreed that no significant amplification because of topographic effect was present in the Monticello records. Tr. 4713, 5493, 5514, 5525, 5540.

42. On January 8, 1982, three days before the final sessions on seismicity were scheduled to begin Applicants conducted so-called "plucking tests" on the concrete pad on which the Monticello accelerometer that had recorded the high ground motion was placed. The purpose of the tests was to demonstrate that the high ground motion, since not attributable to soil or topographical amplification, was attributable to amplification due to a correspondence of the natural frequencies of the soil-pad system with the dominant frequencies of the peak accelerations for the 1978 and 1979 events (in the frequency ranges of 20-25 hertz for peak accelerations and 10 to 15 hertz for peak velocities). The person who purportedly conducted the tests, Dr. Richard Woods, was not present to testify; nor was anyone who was present during the testing. Neither the NRC Staff nor intervenor was notified that the tests were to be conducted. Appendix to Martin testimony, ff. 5522; Tr. 5541-45.

43. The tests consisted of fastening a rope around the 4-ft. × 4-ft. × 1-ft. concrete pad, with the free end attached to the rear axle of a vehicle. The rope was then tensioned and severed by an axe striking an underlying log positioned close to the pad. This set the pad into free vibration. The horizontal and vertical velocity

traces of the vibration were recorded by geophones positioned on the pad. The tests were purportedly carried out with the rope aligned along both principal axes of the pad and were performed in each direction to insure that the results were repeatable. Appendix to Martin testimony, ff. 5522, at 2-3; 5546.

44. In order to describe motion adequately, six measurements of the motion are necessary: rocking in two directions, sliding in two directions, up and down and twisting motions. Here, only two modes were measured, rocking and vertical, and Applicants were not able to say which mode was which. The exact resolution of frequency values was difficult, particularly the high values at which the peak accelerations for the 1978 and 1979 events had been recorded (because of the small scale of the instruments), so that only average values were computed from the record analysis. Because the stiffness was different in the two directions, Applicants had to make "idealized calculations". Furthermore, because of the apparently anomalous readings for the two modes that were suspected, Applicants were somewhat confused by what might have been going on in that soil-pad system. *Ibid.*; Tr. 5548-49, 5565-68.

45. None of the Board or Staff witnesses would attribute any degree of confidence to the results of the plucking tests. Tr. 5567, 5568-69, 5601-03, 5679, 5812-13, 5818, 5819-20, 5841, 5850, 5854, 5983. The Board indicated that it could give no weight to the results of the tests because of their inherent deficiencies, as discussed above. It suggested that, if Applicants wanted to take credit for those tests, they re-run the tests in the presence of Staff experts who would also supply some input into the testing procedure. Staff indicated its availability for any re-testing of the soil-pad interaction. Applicants, however, indicated that it would inform the Board by conference call during the next week as to whether they wished to re-run the tests so that the Board could put some weight on the results. Tr. 5980-87, 5992. At a conference call the next week, Applicants informed the Board and the parties that they did not wish to re-run the tests. The Board gives no weight to the results of the pad tests.

46. In October 1981, the Applicants conducted two explosion tests near the V. C. Summer Nuclear Station. The purpose of the experiment was to acquire data for a comparative study of ground motion at the USGS accelerograph site and at additional instrument sites in the free-field and on building foundations. In the frequency band from 5 to 50 hertz, amplitudes of ground motion on saprolite soil were found to be twice those recorded on the foundation of massive structures on bedrock. Somerville testimony, ff. Tr. 5169, at 1. The field experiment suggests that accelerogram records from the USGS SMA-1 on the dam abutment may not be representative of foundation motions on bedrock, and must be modified accordingly in assessing the effects of RIS on massive embedded structures founded on rock. Tr. 5496-98.

47. The observed differences between the foundation and free-field motions were probably attributable to several effects which cannot be determined in-

dividually from this experiment. Because of the absence of rock outcrops in the site vicinity, it was not possible to obtain free-field records on rock and thereby isolate any effects that might have been due to the saprolite layer. Other possible effects are that, due to the presence of massive concrete structures on large, deeply embedded foundations, foundation motion might differ from free-field motion because of elastic wave incoherence, elastic wave scattering, foundation embedment, inertial resonance of the building mass, and energy transmission between the ground and the structure. These individual effects cannot be separated using the field test data. Somerville testimony, ff. Tr. 5169, at 6-7; Tr. 5496, 5630.

48. Board witness Dr. Joyner felt that the blast test information was not significant because the modes of propagation of ground motion are different from the explosive sources than they are from earthquake sources. Tr. 4713, 4769, 5402-04, 5723-25. Board witness Dr. Luco believed that there could be a reduction of ground motion to the building foundations on rock due to a scattering of the waves and a rigidity of the foundations. He was not convinced that the calculation performed by the Applicants reflected this effect but agreed that the reductions observed for the explosion cases give an indication that the reduction was taking place. He thought that for seismic excitation, reduction factors might be different from those observed in the experiments, but that some reductions are possible and can be calculated, and that a complete soil structure interaction analysis of the scattering of waves by the embedded foundation would disclose those reduction factors. Tr. 5526, 5596-97, 5600-01, 5609. Board witness Dr. Trifunac was also critical of relying upon the blast test information to establish amplification or reduction of ground motion, although most of his criticism was concerned with applying the results of the shallow explosion tests to the case of deeper earthquakes. Tr. 4707-09, 5204-07, 5670-71, 5716, 5821-22. Staff concluded that although the Applicants had performed a great deal of work in a relatively short period of time and that the analyses of blast test data demonstrated a trend toward significant reductions, it did not feel that the Applicants' results were conclusive in a quantitative sense so as to define the final magnitude of reduction. It could not accept Applicants' factor of reduction of 0.5 on the basis of the blast test data, but looked towards a definition of the reduction factors to be employed on the basis of further studies under a confirmatory program already underway. Staff's updated testimony, ff. 5758, at 4, 66.

49. The Board finds that none of Applicants' studies, the soil modelling study, the blast test study, or the pad plucking tests study, have demonstrated that there was any amplification in the Monticello ground motion records. The Board finds further that it is unlikely that there was significant amplification in those records due to soil, topography or accelerometer pad-soil interaction effects. The Board, however, finds that it is likely that there would be a significant reduction in ground motion from the free-field to the foundations of the Summer nuclear buildings because of the embedment of those structures on rock, especially in the high

frequency range, as suggested by Dr. Luco (Tr. 5600-01, 5609), and that appropriate reduction factors can be determined through the confirmatory tests now underway.

D. Maximum Magnitude

50. Applicants submitted that $M_L = 4.0$ is the appropriate maximum magnitude event that can be induced by the Monticello reservoir. Alexander testimony, ff. Tr. 5028, at 12; Tr. 5011. Several lines of evidence were presented in support of this conclusion.

51. First, historic experience both locally and within the Piedmont province was cited. Dr. Alexander testified that no reservoir not associated with active fault zones has produced significantly large earthquakes. Tr. 5011. In the Monticello region of the Piedmont province, all events thought to be induced by reservoirs have been less than $M_L = 4.0$ with a single exception. That exception, the Clark Hill event with $M_L = 4.3$, was said to be "of questionable association with the reservoir itself" because it occurred long after reservoir impoundment and because other comparable events had occurred in that region prior to impoundment. Tr. 5011-12. The data base for this conclusion that RIS events in the Piedmont province are less than $M_L = 4.0$ consisted of 59 reservoirs of similar size to Monticello representing about 2200 years of reservoir operation. McWhorter testimony, ff. Tr. 5031, at 1-2; Tr. 5029.

52. Second, several types of site-specific evidence were said to support the $M_L = 4.0$ for RIS conclusion. The spatial extent of RIS at Monticello is confined laterally to the immediate area of the reservoir and vertically to a depth of less than 3 km. In fact, with respect to the vertical aspect, Dr. Alexander testified that over 98% of the events were shallower than 2 km and approximately 80% shallower than 1 km. Tr. 5012. These bounds were reached quickly (within 1½ years) and have not expanded since that time. Tr. 5012-13. Only microearthquakes (less than $M_L = 3.0$) have occurred since impoundment and their average rate of occurrence has been steadily declining with time. Tr. 5013. The shape of the observed frequency versus magnitude curve is consistent with a limiting magnitude. Tr. 5013. And, finally, heterogeneities in rock properties which have been documented were said to limit the extent of any single fault movement to a distance estimated to be 1 km. Tr. 5014. Recorded stress levels at Monticello were also said to be not sufficiently high to allow extensive ruptures to occur very deep. Tr. 5019.

53. Applicants' consultants also examined worldwide reservoir-induced seismicity to evaluate the conclusion that the maximum RIS event at Monticello would be $M_L = 4.0$. That examination showed that out of 64 confirmed cases of worldwide reservoir-induced seismicity, only 11 had induced events of magnitude 5 or greater. Of those 11 cases, 9 were associated with active faulting and the other 2 were most likely associated with active faulting. Tr. 5029. With the possible

exception of the New Madrid, Missouri earthquakes in 1811 and 1812, there have been no observations of surface rupture occurring in the eastern United States. Nuttli testimony, ff. Tr. 5164, at 5. No active faulting exists at the Summer site. Applicants' experts drew a conclusion from this comparison that "for reservoirs in intraplate tectonic settings away from active tectonic elements, a maximum magnitude of about 4 appears to be appropriate." Tr. 5030.

54. Applicants further argued that the shallow depth of the reservoir-induced seismicity at Monticello reservoir is an important factor limiting the maximum magnitude of such events. Approximately 98% of the events have been less than 2 km deep. Experience from earthquakes throughout the entire central and eastern United States suggests that magnitude 4 is the upper limit for such shallow earthquakes. Nuttli testimony, ff. Tr. 5164, at 4; Tr. 5173, 5175.

55. The Staff position in the SER was that the maximum earthquake for design purposes was $M_L = 4.5$. The distance or depth was not specified. The Staff approved spectra developed by Applicants for this earthquake with the recognition that short duration, high-frequency accelerations from small events could be higher. In developing ground motion estimates Applicants had used a model which assumed that a $M_L = 4.5$ earthquake would occur at a distance of 2 km. Staff updated testimony, ff. Tr. 5758, at 25. The Staff now regards depth as one of the key factors in estimating RIS ground motion. Tr. 5763; Staff Req. Find. 113.

56. According to Staff, a definition of maximum magnitude to be used for design purposes is particularly difficult with respect to RIS. The Staff continues to place great emphasis on experience at other reservoirs in the Piedmont and the largest earthquake in the Piedmont that has tentatively been associated with RIS, the magnitude 4.3 event in 1974 near the Clark Hill reservoir. It was also observed that worldwide RIS earthquakes greater than about a 4.5 occurred in active tectonic areas dissimilar to the Monticello region. Based upon this experience, the Staff adhered to the position that a maximum magnitude of 4.5 was conservative. Staff updated testimony, ff. Tr. 5758, at 25-26, 41.

57. Staff cited approvingly from the testimony of Dr. Nuttli who found no evidence anywhere in the eastern or central U.S. of magnitude 4.5 events occurring at shallow depths (2 km or less). While no depth has been estimated for the Clark Hill earthquake, the intensity and felt area are similar to other earthquakes of this magnitude in the eastern and central U.S. for which Hermann (1979) estimates typical depths of 5 to 16 km. *Id.*, Tr. 5886. Based on this, the Staff took the position that, if indeed a 4.5 event were to be triggered by the reservoir at Monticello, the best estimate as to its depth would be this typical normal depth range of 5 to 16 km. *Id.*; Tr. 568-69.

58. The Staff next addressed its estimation of the maximum magnitude event for the shallow zone of reservoir-induced seismicity (upper 2 km). Staff reviewed several arguments presented which would limit the maximum magnitude. First, the maximum magnitude shallow earthquake at the reservoir to date has been about

$M_L = 3.0$. Tr. 5769. Second, *in situ* stress measurements of M. Zoback of the USGS at Monticello tend to indicate that the events with larger stress drop should occur in the upper few hundred meters. Staff updated testimony, ff. Tr. 5758, at 27. This is supported by the fact that the largest stress drops and the highest peak accelerations have come from events which occur in the upper few hundred meters and also from the fact that seismicity decreases with depth under the reservoir. Tr. 5769. This position was also influenced by the tendency of the frequency-magnitude curve to indicate saturation at about $M_L = 3.0$. *Ibid.*; Tr. 5947, 5953.

59. Staff recognized Zoback's measurements in arriving at its conclusions with regard to maximum magnitude. Tr. 5891, 5897, 5901-02; Staff updated testimony, ff. Tr. 5758, at 41. According to Staff, Zoback's findings appeared to be borne out by the Applicants' calculation of stress drop for the strongest ground motion recorded at Monticello. Staff noted the Applicants' estimates of depths for these events ranging from 70 to 360 meters with the highest stress drops being associated with the earthquake of $M_L = 2.4$ and 2.8 at depths of 200 and 70 meters, respectively. *Id.* at 27.

60. Third, there has been an overall decline in the rate of seismic activity which suggests that stored strain is not being replenished. *Id.* at 28. Fourth, it referred to Dr. Nuttli's testimony which indicated that no earthquake greater than $M_L = 4.0$ has occurred at such shallow depths anywhere within the eastern U.S. Fifth, the Staff's ground motion estimate is not dependent on the Applicant's ground motion model which includes uncertainties in source characteristics such as stress drop and interpretations of saturation of ground motion with distance. Tr. 5769. Sixth, the Staff has chosen to envelope recorded ground motions instead of choosing the 50th or an 84th percentile level of a suite of spectra. *Ibid.*

61. Based on the above, the Staff took the position that the best estimate of maximum magnitude for the shallow zone of seismicity is $M_L = 3.0$. Tr. 5883, 5914-15.

62. Portions of Applicants' case with regard to the maximum magnitude to be expected were unconvincing. Their argument with regard to heterogeneities in rock properties limiting the extent of a single fault movement to 1 km lends support to the proposed limit of $M_L = 4.0$ in the quantitative sense only through application of the Brune model. However, the *in situ* stress measurements and the 1 km source dimension estimate used to apply the Brune model to determine maximum magnitude cannot be relied upon to limit the magnitude to 4.0. See finding 34, *supra*. If the source dimension were doubled from 1 to 2 km, as might be reasonable under circumstances testified to by Applicants' witness (Tr. 5109-10), the magnitude would increase from 4.0 M_L to 4.6 M_L . Tr. 5876-77.

63. The Board concludes, from the evidence relied upon by Applicants and Staff, that a maximum magnitude of between 4.0 and 4.5 is reasonable. The Board further agrees that, if indeed an event between 4.0 and 4.5 were to be triggered by

the reservoir at Monticello, its depth would be the typical normal depth range of from 5 to 16 km.

64. However, the Board does not agree with Staff that the maximum magnitude shallow earthquake that might be expected at the reservoir will be about $M_L = 3.0$, similar to what had already occurred. The Board finds this inconsistent with the statement in the SER, with which the Board agrees, that "there is no reason to assume that the largest earthquake induced by Monticello reservoir has yet occurred." Stf. Ex. 1 at 2-26. In our opinion, the statement should apply also to the shallow earthquakes at Monticello. Staff's projection of a maximum 3.0 M_L earthquake does not give sufficient weight to Dr. Nuttli's upper limit to magnitude 4.0, rather than 3.0, for shallow earthquakes in the central and eastern United States. More importantly, it ignores two significant shallow earthquakes that the Board believes should serve as a conservative model for the expected maximum shallow event at Monticello: the Lake Jocassee 3.7 M_L RIS event in 1974 at a best estimate depth of 2 km, and the Illinois 3.8 M_L event of 1965 at a depth of 1.5 km. The Lake Jocassee event occurred six years after impoundment of a South Carolina reservoir. The largest RIS worldwide have occurred up to 10 years after impoundment. Tr. 5095-97, 5172; Nuttli testimony, ff. Tr. 5164, at 2, 4; Staff updated testimony, ff. 5758, at 15, 26-27.

65. The Board finds, on the basis of the evidence presented by Applicants and Staff, that a maximum magnitude for a shallow RIS event $M_L = 3.8$, approximately 1 full magnitude above what had already been experienced at Monticello and equal to the Lake Jocassee, South Carolina and the Illinois events, would be a conservative and appropriate estimate. Any higher magnitude event would be expected to occur at normal tectonic depths.

E. Ground Motion

1. Deep Earthquakes

66. In their original presentation to the Staff and at the opening seismic hearings on June 22-24, 1981, Applicants defined the ground motion from a maximum magnitude 4.5 earthquake using the H-M adaptation of the Brune model, assuming hypocentral distance of 2.0 km and an rms stress drop of 25 bars. The resulting peak acceleration of 0.22g was converted to a response spectrum using the 84th percentile (mean + one sigma) amplification ratios of Johnson and Traubenik. In its SER and the original hearing, Staff considered that spectrum and anchor point appropriate for use in evaluating the effects of a reservoir-induced $M_L = 4.5$ earthquake upon the plant. See findings 10-12, 17, 23, *supra*.

67. At the further hearings in January 1982, Applicants continued to rely upon the H-M adaptation of the Brune model and the Johnson and Traubenik amplification ratios as the main support for their ground motion estimates. Staff revised its

assumptions with regard to the expected depth of this maximum magnitude earthquake and the anticipated stress drop. It assumed that the event would occur at the typical tectonic depths of 5 to 16 km and an rms stress drop of 50 bars would be appropriate. It examined the sensitivity of these changed assumptions upon the Applicants' estimate of 0.22g and found that the effects of the increase in stress drop upon the estimated peak ground acceleration were more than compensated for by the effect of the increase in distance. Since it also considered the use of the Johnson and Traubenik model acceptable at the increased distance and magnitude range, it concluded that the response spectra derived from the maximum magnitude 4.5 RIS are conservative. Staff updated testimony, ff. Tr. 5758, at 35.

68. In view of the unproven ability of the H-M adaptation to predict ground motion in the eastern and central United States and the uncertainties involved in applying that model, the Board cannot rely upon it to establish the ground motion parameters. We find the use of the Johnson and Traubenik amplification ratios less objectionable for use with the typical tectonic depth earthquakes of from 5 to 16 km than with shallow RIS (for which they would be unacceptable). We also find, however, that certain other methods for estimating ground motion utilized by Applicants and Staff in preparing for the further seismic hearings are preferable, and rely upon them instead.

69. At the further seismic hearings, Staff testified that it recently became aware of the availability of an extensive set of strong motion records recorded at an earthquake sequence near Mammoth Lakes, California in 1980. Thousands of records from over a thousand earthquakes in the magnitude 1 to 6 range were recorded. The Staff asked Applicants to evaluate the data set so as to determine whether site-specific spectra suitable for use in determining the ground motion from a $M_L = 4.5$ earthquake could be estimated. *Id.* at 36; Tr. 5907-08.

70. The earthquake sequence occurred predominantly within the Sierra Nevada, immediately to the south of Long Valley caldera. The site conditions within the caldera, where many of the seismographic instruments were deployed for reasons of accessibility and logistics, do not resemble site conditions at the V. C. Summer Nuclear Station. The McGee Creek site lying outside the caldera is more similar to the Summer site. It is situated on a few meters of glacial till underlain by metamorphosed rocks which are in turn draped over granite. All events from magnitude 4.3 to 4.8 recorded on the McGee Creek seismograph were selected for comparison. Tr. 5347-49. For events recorded at McGee Creek in the magnitude range 4.3 to 4.8, the average 50th and 84th percentile peak acceleration values are 0.11 and 0.18g, respectively. Staff updated testimony, ff. Tr. 5758, at 36.

71. Based on its current knowledge, the Staff testified that this data represents the best source of data available to determine ground motion from an $M_L = 4.5$ earthquake in the 5 to 16 m depth range. *Ibid.*; Tr. 5765. The average hypocentral distance of 7.3 km associated with the data set used by the Applicants indicate that

the resulting spectra would be a conservative estimate of ground motion within this range.

72. Staff acknowledged that questions arise with respect to the use of these data in estimating ground motion at an eastern site. These questions relate to regional differences in source characteristics and attenuation, and differences between the site conditions at the Mammoth Lakes recording station and those at the Summer plant. The Staff did not believe, however, that these differences preclude use of the Mammoth Lakes data at the Summer plant. The Staff stressed that the primary difference between eastern and western U.S. is that ground motion from eastern U.S. earthquakes is larger at greater distances. Tr. 5899; Staff updated testimony, ff. Tr. 5758, at 37-38.

73. Applicants' analysis demonstrated that at frequencies less than 7 hertz the Applicants' model spectrum would exceed the Mammoth Lakes spectra for all frequencies. At frequencies greater than 7 hertz the Mammoth Lakes 84th percentile was approximately equal to the model spectrum except for a sharp exceedance centered about 8 to 9 hertz and a slight exceedance at 15 to 20 hertz. *Ibid.* (See figure 1 of Staff updated testimony at 90.)

74. Staff regarded these peaks as consistent with those observed in the individual spectra and believed the peaks reflect the peculiar site conditions at the particular recording station. Staff took the position that the Mammoth Lakes site-specific spectrum verified the conservatism of the Applicants' model RIS spectrum for describing ground motion from an $M_L = 4.5$ earthquake for those structures at the Summer plant founded on rock. *Id.*; Tr. 5767. The Board finds this position both reasonable and convincing and supported by the weight of the evidence.

75. Applicants conducted an analysis of accelerograms recorded during aftershocks of the 1975 Oroville, California earthquake. Accelerograms recorded at five rock-like sites during the aftershock sequence were selected for analysis. RM-5, ff. Tr. 5042, at 1.

76. Forty-four components of horizontal motion were obtained at these sites from standard accelerographs. Magnitudes of these events vary from 4.0 to 5.2 with an average magnitude of 4.4. Focal depths of the forty-four components vary between 6.3 and 12 km with an average of 9.4 km, and hypocentral distances are all less than about 15 km. The records were processed to retain all information in a frequency range from 0.65 to 46 hertz. Values of peak acceleration corrected for instrument response range from 28.7 to 204.6 cm/sec² (0.03g to 0.21g). *Id.*, at 1-2, Table 3; Tr. 5352-53.

77. Applicants also presented testimony from Dr. Nuttli that, for normal depth earthquakes in the eastern United States, peak horizontal accelerations in the near-source region of $M_L = 5$ earthquakes are estimated at 0.11g, which is less than the SSE value. Nuttli testimony, ff. Tr. 5164, at 7. However, there were few data points in the curves on which he based his testimony, and all but one were

concentrated around a distance of 100 km from the source. Furthermore, the curves were constructed for an assumed focal depth of 10 km. Dr. Nuttli indicated that he would not feel comfortable in using the curves for anything but far-field earthquakes and that, even with those, an assumed focal depth of less than 10 km (such as 5 km) would require that the curves be pushed up to higher values. *Id.*, at figure 2; Tr. 5475-76. Under these circumstances, the Board does not place any reliance upon Dr. Nuttli's curves to establish or support any ground motion parameter.

78. As an additional measure, the Staff compared the peak acceleration of 0.22g proposed by Applicants with estimated peak accelerations for an $M_L = 4.5$ earthquake derived most recently by other investigators using other techniques. Staff updated testimony, ff. Tr. 5758, at 38; Tr. 5907-08. This comparison with recent estimates of peak acceleration versus magnitude and distance for different locations around the world indicated a wide variation in estimates, with Applicants' assumed peak of 0.22g exceeding almost all of these estimates. *Id.* at 41.

79. Board witness Dr. Luco agreed with the ground motion estimates made by Staff in its supplemental testimony with regard to normal tectonic depth earthquakes. For a maximum magnitude earthquake on the order of 4.5 at a depth of greater than 5-6 km, he found the mean + one standard deviation spectra for Mammoth Lake and Oroville to support the reasonableness of Applicants' 0.22g RIS spectra for defining the maximum ground motion from these deeper events. Tr. 4728, 4973, 5596. Board witness Dr. Joyner also had no problem with the ground motion from the deeper events. Tr. 5733. The Board agrees that the ground motion from earthquakes up to 4.5 M_L at normal tectonic depths will not exceed Applicants' 0.22g RIS spectra.

2. *Shallow Earthquakes*

80. In addition to relying upon the H-M adaptation of the Brune model (which the Board finds unreliable), Applicants also made ground motion estimates based upon scaling up the ground motion from six events at the Monticello reservoir to a 4.0 magnitude earthquake. Applicants' witness Dr. Robin McGuire scaled up the spectral amplitudes from these events directly, rather than scaling the spectral shapes using a parameter such as peak ground acceleration. In Dr. McGuire's opinion, although the data were inadequate for conclusive estimates, the comparison indicated that the Applicants' RIS spectrum was adequate in that it appeared to envelope the scaled values, except perhaps at high frequencies. Tr. 5555-65 (including insert).

81. However, in addition to not being conclusive, the scaling was also defective. Dr. McGuire used a factor of 0.5 to represent amplification in the records, which the Board does not accept as having been established. Furthermore, had he used the correct exponent of 0.5, rather than 0.25, it would have resulted in

the amplitudes at 4.0 magnitude being multiplied by a factor of 1.7. Tr. 5741-48. Consequently, the Board does not accept that analysis.

82. According to Staff, use of the Applicants' model is not appropriate to determine ground motion from shallow earthquakes at close distances. As it testified, the Johnson and Traubenik amplifications would not be appropriate where significant ground motion is expected at high frequencies such as have already been observed from nearby earthquakes at Monticello. In addition, the issue of saturation of ground motion with distance would have to be resolved if earthquakes at very close distances (within two source radii) were considered. Tr. 5912; Staff updated testimony, ff. Tr. 5758, at 41-42.

83. The peak acceleration at Monticello of 0.35g, for the October 16, 1979 event, was recorded at a hypocentral distance of 0.8 km from a magnitude 2.8 earthquake at a depth of 70 meters. The Staff examined the effects an increase in magnitude would have upon ground motion estimates. Utilizing peak acceleration (that parameter most related to spectral response at high frequencies), the Staff stated that one can estimate the ground motion at these frequencies. Assuming a scaling with magnitude recommended by Joyner and Fletcher and a typical scaling with respect to distance, it was indicated that 0.35 g for an $M_L = 2.8$ earthquake at 0.8 km would scale to the same value or less assuming an $M_L = 4.0$ earthquake at a distance of 2 km or more. *Id.* at 43.

84. If a larger event were to occur, Staff assumed it would be deeper and the resultant ground motion from this event would be enveloped by the envelope of existing ground motions and estimated RIS spectra. Staff found 2 km to be a very conservative estimate of hypocentral distance based on the distance of the plant to the earthquake clusters and Dr. Nuttli's estimate of 2.3 km as the shallowest depth at which an $M_L = 4.0$ event would occur. Thus, the larger but deeper events would have acceleration values that are the same or less. *Ibid.*; Tr. 5770, 5913.

85. Staff emphasized that the purpose of scaling peak acceleration was not to arrive at a definitive estimate of peak acceleration from an $M_L = 4.0$ at 2 km. Rather, the purpose was to provide some reasonable estimate as to the relative difference at high frequencies between the highest ground motion recorded so far at the Monticello dam abutment and the ground motion that may be recorded near the Summer plant from a postulated larger earthquake within the shallow zone of reservoir-induced seismicity. Staff updated testimony, ff. Tr. 5758, at 43.

86. The Staff concluded that the appropriate designation of the largest ground motion at the Summer site from the occurrence of RIS within the shallow zone of seismicity is the envelope of the response spectra from data that have been recorded at Monticello. *Id.* at 44; see figure 1 of Staff updated testimony at p. 90. The Board finds this position both reasonable and conservative. This ground motion envelope exceeds the Applicants' proposed RIS spectrum at frequencies greater than 10 hertz.

87. In reaching the conclusion that the envelope of the response spectra from data recorded at Monticello can be relied upon, the Board relies heavily upon the agreement of Board witnesses Drs. Luco and Trifunac with this procedure. Dr. Luco recommended that the effects of scattering by the embedded foundation also be taken into account to the extent of any expected reductions of motion in the frequency range of from 5 to 30 hertz. Tr. 4711-12, 4982, 5596-97. The Board agrees that those effects should be taken into account in the further confirmatory tests. The Board also relies upon the testimony of Staff seismologist Dr. Andrew Murphy that larger magnitude events tend to occur at deeper depths for its conclusion that the maximum shallow earthquake postulated by Staff of $M_L = 4.0$ will occur at a distance of 2 or more kilometers from the plant. See Tr. 5781. The Board notes that its concern for shallow earthquakes extends only to a maximum of 3.8 M_L , as discussed earlier.

88. The Board also notes that Board witness Dr. Joyner scaled ground motion from the August 1978 2.8 M_L event to higher magnitudes. Because he maintained hypocentral distances of less than 1 km for the higher magnitude events, which the Board finds would not likely occur within a depth of only 1 km, the Board does not accept his higher ground motion estimates. See Joyner report of November 12, 1981, ff. Tr. 4696, at Table 1.

F. Damage to Plant and Equipment

89. On the basis of the evidence adduced, Board witnesses Drs. Luco and Trifunac saw little danger to the nuclear plant structures themselves from the maximum magnitude earthquakes projected for the Monticello reservoir area. Tr. 4884, 4988. The Board agrees with that assessment. As a general proposition, none of the witnesses were aware of any damage to engineered facilities from an earthquake equal to, or less than, a magnitude 5. Tr. 4847-48, 4962-63, 5000, 5262, 5332. This lack of observations of damage should obviate any concern for damage to plant structures from the postulated maximum 4.5 M_L earthquake at normal tectonic depths. Furthermore, the maximum epicentral intensity for a Piedmont Province earthquake was Intensity VII, and for the Clark Hill earthquake, upon which the projected 4.5 maximum magnitude deep earthquake was primarily based, only about Intensity V. Tr. 5947-48, 5960. By definition, an Intensity VII earthquake would not cause damage to engineered structures.⁹

⁹ Intensity VII on the Modified Mercalli Intensity scale of 1931, the intensity scale utilized by the expert witnesses, is defined by *United States Earthquakes, 1978* at 6, as follows:

VII. Frightened all — general alarm, all ran outdoors. Some, or many found it difficult to stand. Noticed by persons driving motor cars. Trees and bushes shaken moderately to strongly. Waves on ponds, lakes, and running water. Water turbid from mud stirred up. Incausing to some extent of sand or gravel stream banks. Rang large church bells, etc. Suspended objects

(Continued)

90. Similarly, while there have been few opportunities for observations of damage to engineered facilities from shallow earthquakes in the range of interest, Applicants' expert, Dr. Nuttli, has correlated the most damaging eastern United States earthquakes occurring at shallow depths with their epicentral intensities. Except for two earthquakes occurring in a region of intensive mining, in or above a mine itself, in which maximum intensity was VIII, the maximum intensity of the other earthquakes was Intensity VII. Tr. 5174-76. It is extremely unlikely that the historical maximum intensity of VII for a nonmining region for all shallow eastern U.S. earthquakes would be exceeded by an earthquake occurring at a shallow depth at Monticello.

91. More specifically, with regard to the spectral values of ground motion anticipated at Monticello, we see no likelihood of damage to the nuclear plant structures. To begin with, these structures have natural periods longer than those corresponding to the high frequencies discussed above, at 10 hertz or greater. The peak accelerations, which might occur as random high frequency spikes on the acceleration time history, do not represent a significant energy input to the structures. The response of the structures would be essentially the same whether or not the peaks occur. The high frequency spikes do not contain sufficient energy to overcome the inertia of large structures and the frequency of the spikes is well above the response frequency of the power plant structures, thus precluding resonant response. Staff examined the effect of the spectral exceedances in question on the safety related structures. It testified that these structures all have fundamental frequencies below 10 hertz, significantly removed from the peak high frequency motions characterized by the free-field response spectra. Because of this difference in frequency, the response of major structures of the high frequency motion will be low and less than the response spectra predicted by use of the SSE response spectra. According to the Staff, the stresses induced in the structures are controlled by the SSE response spectra. Staff updated testimony, ff. 5758, at 63; Tr. 5772-73.

92. Applicants have demonstrated many conservatisms in the design and construction of the nuclear plant structures above and beyond the design response spectra to which the plant structures were built. Since the Board has found that spectral exceedances due to the reservoir-induced events (both deep and shallow) fall in the range above the fundamental frequencies of the safety related structures,

made to quiver. Damage negligible in buildings of good design and construction, slight to moderate in well-built ordinary buildings, considerable in poorly built or badly designed buildings, adobe houses, old walls (especially where laid up without mortar), spires, etc. Cracked chimneys to considerable extent, walls to some extent. Fall of plaster in considerable to large amount, also some stucco. Broke numerous windows, furniture to some extent. Shook down loosened brickwork and tiles. Broke weak chimneys at the roof-line (sometimes damaging roofs). Fall of cornices from towers and high buildings. Dislodged bricks and stones. Overturned heavy furniture, with damage from breaking. Damage considerable to concrete irrigation ditches.

the conservatisms constitute additional reasons why the safety of the structures is beyond question.

93. With regard to safety related equipment and components, however, there is greater concern. Their natural frequencies range between 4.5 and 44.7 hertz, and they might be affected by the spectral exceedances above 10 hertz. Applicants have demonstrated that certain margins exist in the original design of the equipment and components that might accommodate ground motion exceedances over the original design spectra from reservoir-induced seismicity. See Chen testimony, ff. Tr. 5324. Board witness, Dr. Luco, examined the safety margins and expressed some concern with regard to certain pieces of equipment or piping where the margins amounted only to approximately 30%. Tr. 4727, 4730, 4971-72, 4986-88, 5439. The Board agrees that, only with respect to equipment which the safety margins have been shown to be low, is there any concern.

94. Staff discussed the effect of spectral exceedances on systems and equipment mounted in the structures. These will be excited by the motion of the structure at the mounting location(s) of the various components. It noted that higher frequency motion (above 10 hertz) with little amplification will theoretically be present in excess of that predicted by the ground motion characterized by the SSE response spectra. In the judgment of the Staff, prudence suggested that any evaluation include the high frequency motions. Staff updated testimony, ff. Tr. 5758, at 63-64. The Board agrees. Systems and equipment mounted on or near the foundation slab will experience the high frequency motions directly transmitted through the slab. According to the Staff, it is for this group of components that evaluation of the higher frequency motion is most significant. *Ibid.*

95. The equipment and components now installed in the plant have been qualified by tests and analysis to the SSE design level. The practicalities of much of the testing are such that this equipment has, in fact, seen excitation at the higher frequencies up to perhaps 40 hertz. As far as structural integrity, much of this equipment can take very high peak acceleration loads. Tr. 5774, 5796.

96. Further insight into the sensitivity of nuclear safety grade components to high frequency excitation (20 to 80 hertz and above) is available through the extensive requalification testing being performed for Mark II and Mark III boiling water reactors. The firms supervising the test program report that inputs less than 60 hertz rarely cause malfunction and that where malfunction has occurred, the mode has been primarily minor contact chatter. Staff updated testimony, ff. Tr. 5758, at 65.

97. Applicants have a present commitment to review all systems and components necessary for shutdown and continued heat removal to confirm that explicit margins exist for each safety component. *Id.* at 5, 65. Staff characterizes this effort as confirmation that the equipment with high-frequency response on the lower levels of the facility have appropriate margins to perform their intended function for the life of the plant. Staff proposed find. 164. The Staff testified that reservoir-

induced ground motion employed for this evaluation should, to the extent reasonable, take into consideration appropriate reductions in the free-field spectra. Tr. 5774, 5787. The Board agrees. The ACRS advised, and the Staff concurred, that undertaking this confirmatory program need not prohibit plant operation. Tr. 5774-75. The Board agrees. The Staff believes this task could be completed during the early period of operation. Tr. 5787.

G. Charleston Earthquake

98. At the construction permit stage, the NRC Staff concluded that the weight of the seismologic and geologic information supported the proposition that the seismicity in the vicinity of Charleston, S.C., including the Modified Mercalli intensity IX-X 1886 earthquake, was related to structures beneath the Coastal Plain province in the Charleston area and should not be assumed to migrate outside of the immediate Charleston area. The Licensing Board presiding at that stage agreed. *South Carolina Electric and Gas Co.* (Summer Nuclear Station, Unit 1), LBP-73-11, 6 AEC 213, 218 (1973). Following the issuance of the construction permit, the then AEC contracted with USGS to perform an extensive geologic and seismologic investigation of the Charleston region. As the USGS investigation progressed, numerous working hypotheses evolved concerning the source mechanism of seismicity in that area. A summary of the USGS position on this matter is contained in a December 30, 1980 letter from J. F. Devine, USGS, to Dr. R. E. Jackson, NRC, which is included as Appendix E to Staff Exhibit 1. That letter concluded, in material part, that the concentration of seismicity in the Charleston earthquake epicentral area both before and after the 1886 event and the lack of post-Miocene faulting in the evidence for localizing large earthquakes indicate that the likelihood of a Charleston size event in other parts of the Coastal plain and Piedmont is very low. Consequently, the report continued, earthquakes similar to the 1886 events should be considered as having the potential to occur in the vicinity of Charleston and seismic engineering parameters should be determined on that basis. *Id.*, Tr. 1070-71. It continued with a recommendation that research on the sources of the Charleston and other East Coast earthquakes should continue if a more definitive resolution of the problem is to be obtained.

99. Applicants also performed a reassessment of the impact of Charleston seismicity on the Summer site in light of the new data compiled by the USGS since the construction permit stage. Applicants' assessment is contained in their Exhibit 1. Applicants' position on the Charleston earthquake was summarized in the prefiled testimony of Dr. Alexander. It concluded from the extensive work done by USGS, evaluations of the most prominent hypotheses, the probabilities of future occurrences and the historical record of seismicity in the Charleston area, that there was no observational evidence to indicate that an earthquake comparable to the 1886 event will reoccur in any location except in the Charleston vicinity. Dr.

Alexander further testified that a recurrence of such an event in the Charleston area will not generate ground motions that exceed the Summer design basis. Alexander testimony, ff. Tr. 728, at 16. *See* Tr. 921-22.

100. Staff reviewed the results of the USGS study of the Charleston region, the working hypotheses formulated as a result of that work, and the analyses of the Charleston region performed by the Applicants. Based on its consideration of this information, the Staff concluded that the position held at the construction permit stage is still valid, namely, that there is no basis to assume that an earthquake equivalent to the 1886 Charleston earthquake is likely to occur anywhere but in the general vicinity of Charleston, South Carolina. Staff took the position that the 1886 Charleston earthquake can be reasonably related to the complex geologic structure unique to the region and in consideration of the recurrent seismicity in the area should not, in developing the earthquake design basis for the facility, be assumed to occur at the Summer site. However, because a clear association between structure and seismicity has not been demonstrated, it recommended that geological and seismological research be continued in the Charleston area. Stf. Ex. 1 at 2-38 to 2-39. It reaffirmed this position at the hearing that there was no basis to migrate the Charleston earthquake to other parts of the Coastal Plain or Piedmont provinces. Tr. 1063, 1070-71, 1155.

101. The Board has reviewed the evidence presented and finds that it supports the reasonableness of the construction permit Licensing Board's conclusions that the 1886 Charleston earthquake can be localized to the local Charleston area. The Board, therefore, concludes that there is no new information that warrants reopening this matter at this operating license stage for a re-determination on the merits.

H. Wateree Creek Fault

102. Subsequent to the impoundment of the Monticello reservoir and the ensuing increase in local seismic activity, the USGS contracted the services of Dr. Donald T. Secor, Jr., Department of Geology, University of South Carolina, to conduct an intensive geologic investigation of the general area surrounding the reservoir. During the course of the investigation, Dr. Secor mapped a previously unrecognized fault within the Chapin quadrangle which he named the Wateree Creek fault. Alexander testimony, ff. Tr. 728, at 16-18. Applicants' expert Dr. Alexander testified that, on the basis of his review of the findings of Dr. Secor to date, the fault had been traced northward to a point approximately 2 km northeast of Peak, South Carolina and there was no observational evidence of northward continuation of the fault to the vicinity of the Monticello reservoir. Further, there was no geological evidence to suggest that the fault is capable nor has any seismicity been associated with it. *Id.* at 18-19. Accordingly, Applicants did not believe this feature was of concern to the safety of the facility. *Ibid.*

103. The Staff took the position in the Safety Evaluation Report that, on the basis of the information then known, it was reasonably assumed that the Wateree Creek fault may be presently adjacent to the Monticello reservoir, that there is no historic seismicity associated with that fault, and that there is no geological evidence for capability of the Wateree Creek fault. Stf. Ex. 1 at 2-26 to 2-27. Thus, the Staff concluded that the Wateree Creek fault did not pose a hazard to the site. The Staff did consider it prudent, however, for Applicants to continue to monitor the ongoing mapping of that fault. *Id.* at 2-39.

104. In order to explore the matter further, the Board sought the appearance of Dr. Secor to explain the state of knowledge about the Wateree Creek fault. Dr. Secor explained the status of his mapping efforts and testified that he found no evidence that the Wateree Creek fault extended into the Monticello quadrangle (Tr. 793), that the fault had not moved in “roughly one hundred million years” (Tr. 794) and that the attitude of the fault was not “particularly favorable for reactivation” (Tr. 796). Dr. Secor professed his general agreement with the conclusions drawn by Applicants from his work. Tr. 795. Dr. Secor further testified that there was no unknown area that would cause him to have reservations about the Wateree Creek fault upsetting the conclusions of the USGS or NRC Staff so far concerning the site. Tr. 799. Finally, Dr. Secor testified that the reservoir-induced seismicity was unrelated to the Wateree Creek fault (Tr. 801) and that the Wateree Creek fault would not likely be activated by reservoir-induced seismicity (Tr. 803).

105. Applicants felt that Dr. Secor’s testimony strengthened their earlier testimony. Tr. 980. In addition, on the strength of Dr. Secor’s testimony, the NRC Staff expressed less certainty about its earlier position on the possible northward continuation of the Wateree Creek fault. Tr. 1063. It observed that the fault was older than it had previously thought. Tr. 1092. On the basis of the entire evidence on this matter the Board finds that the Wateree Creek fault poses no hazard to the Summer site.

I. Continued Microseismic Monitoring

106. The final seismic issue concerned Intervenor’s contention that seismic monitoring should continue until the end of 1983. The NRC Staff indicated its intention to impose a license condition whereby the Applicants must continue to monitor seismicity until the end of 1982 and may not terminate such program unless prior written approval is received from the Staff. Stf. Ex. 1b at 18-3. The Staff believes that this continued monitoring is desirable in order to detect any possible event larger than that experienced to date. Stf. Ex. 1 at 2-23; Tr. 1069. Applicants testified that they believed that the largest or approximately largest reservoir-induced event had already occurred at the site — magnitude 2.8. Tr. 886-888, 909.

107. The Board agrees with the Staff that continued microseismic monitoring is desirable. Considering that the Board also agrees with the SER's statement (Staff Exhibit 1 at 2-26) that "there is no reason to assume that the largest earthquake induced by Monticello reservoir has yet occurred"; that the largest reservoir-induced earthquakes generally occur up to 10 years after impoundment; and that the maximum event at Lake Jocassee, S.C. occurred about six years after water level approached full pond, we cannot see how the elimination of seismic monitoring before the end of 1983 can be justified. Full pond elevation occurred on February 8, 1978. *Id.* at 2-22. Staff could not explain why the same reasons that require monitoring until the end of 1982 would not also require monitoring to continue at least until the end of 1983. Tr. 1146-49.

IV. PRINCIPAL FINDINGS

108. The maximum magnitude potential earthquake at normal tectonic depths (5-16 km) at the Monticello reservoir is $M_L = 4.5$.

109. The maximum magnitude potential earthquake at shallow depths (0-3 km) at the Monticello reservoir is $M_L = 3.8$.

110. The ground motion model (the H-M adaptation of the Brune model) relied upon by Applicants in the FSAR and the opening hearings on seismicity (June 22-24, 1981), and approved by Staff in the SER, is unreliable. Because of its uncertain parameters, a conservative application of that model would result in a peak acceleration anchor point 3 or 4 times as great as the 0.22g anchor point predicted by Applicants. For the earthquakes occurring on October 27, 1978 and October 16, 1979, rms stress drops for each event were conservatively calculated at from 2 to 4 times the 25 bars utilized by Applicants in their application of the H-M model. The H-M model is too unpredictable to be used for estimating ground motion.

111. The Johnson and Traubenik amplification ratios used by Applicants to construct response spectra, upon which Applicants relied in their SER and the opening seismic hearings and which was approved by Staff in the SER, are inappropriate for the shallow reservoir-induced seismicity expected at Monticello reservoir.

112. Applicants have failed to demonstrate that the high peak horizontal acceleration readings for the August 1978 and October 1979 earthquakes of 0.25g and 0.35g, respectively, reflected any amplification of ground motion as the waves propagated from the underlying bedrock to the surface where they were recorded. In particular, Applicants have failed to demonstrate that there was any amplification due to soil, topography, or accelerometer pad-soil interaction. It is likely, however, that the ground motion exhibited in the free field during an earthquake would be reduced as it is transmitted to the nuclear plant structures embedded in rock because of a scattering of the waves and the rigidity of the foundations.

113. Through use of ground motion estimates and response spectra derived from earthquakes at Mammoth Lake and Oroville, California, Applicants and Staff have demonstrated that the ground motion from the maximum magnitude earthquake postulated for normal tectonic depths (5-16 km), utilizing the appropriate damping values, will not exceed the motion predicted by Applicants' SSE design response spectra. For that reason, and on the basis of empirical observations with regard to epicentral intensities and damage from other tectonic events, Applicants and Staff have demonstrated that there will be no damage to the nuclear plant structures or equipment from a maximum magnitude earthquake occurring at normal tectonic depths.

114. By utilizing the envelope of response spectra from data already recorded at Monticello, Staff has demonstrated that the ground motion from the maximum magnitude postulated shallow event, at the proper damping values, will exceed Applicants' SSE design response spectra only at frequencies greater than 10 hertz. For that reason, and based upon empirical observations with regard to epicentral intensities from other shallow earthquakes in the eastern United States and from observations of damage from other earthquakes, Applicants and Staff have demonstrated that the maximum magnitude shallow earthquake postulated for the Monticello reservoir (3.8 M_L) will not damage the nuclear plant structures.

115. Because some of the safety related equipment and components have natural frequencies above 10 hertz, and some of the systems and equipment are mounted on or near the foundation slab where they will experience high frequency motions transmitted directly through the slab, Applicants have committed themselves to reviewing the systems and equipment necessary for shutdown and continued heat removal to confirm that explicit safety margins exist for each component. The Board agrees that this review may take into account appropriate reductions of ground motion attributable to the embedment of the foundations in rock and that the Summer plant can commence operations prior to the completion of the confirmatory program. The Board, however, does not agree that the confirmatory program can rely upon any of the evidence adduced in this proceeding as establishing amplification factors in the ground motion recordings due to soil, topography, or accelerometer pad-soil interaction.

116. The existence of the Wateree Creek fault does not pose any danger to the Summer nuclear plant.

117. No evidence has been adduced which would warrant reopening the finding of the construction permit Licensing Board that the 1886 Charleston earthquake should be localized to the immediate Charleston area.

118. It is likely that the maximum magnitude earthquake from RIS at Monticello will not occur until 6 to 10 years after impoundment, which took place in February of 1978.

V. CONCLUSIONS OF LAW

Based upon the entire evidentiary record of this proceeding, and upon the foregoing findings of fact, the Board concludes that with regard to Contention 4: a) the FSAR was inadequate with respect to the description of seismic activity in the area of the Summer plant site. However, the inadequacies were cured by the full record in this proceeding; and b) site seismicity must be monitored at least until the end of 1983, and Staff should consider further monitoring at that time as an additional licensing requirement.

The Board concludes further that, if the licensing conditions set forth below are implemented, the seismic safety of the Summer nuclear plant will be assured.

VI. LICENSING CONDITIONS

In the event that the other issues are resolved in favor of plant operation (with or without further conditions), the Licensing Board will require the following conditions to the granting of the operating license:

1. That seismic monitoring be continued at least until December 31, 1983, and that Staff reevaluate at that time the need for further monitoring to be made an additional licensing requirement; and
2. That Applicants successfully complete during the first year of operation the confirmatory program on plant equipment and components, within the guidelines established in the Findings, to demonstrate to Staff's satisfaction that explicit safety margins exist for each component necessary for shutdown and continued heat removal in the event of the maximum potential shallow earthquake.

VII. ORDER

IT IS ORDERED, in accordance with 10 CFR §§2.760, 2.762, 2.764, 2.785, and 2.786, that this Partial Initial Decision shall become effective and shall constitute, with respect to the matters covered herein, the final decision of the Commission 30 days after the date of issuance hereof, subject to any review pursuant to the above cited Rules of Practice. Exceptions to this decision may be filed within ten (10) days after service of this Partial Initial Decision. A brief in support of such exceptions may be filed within thirty (30) days thereafter, forty (40) days in the case of the Staff. Within thirty (30) days after service of the brief of

appellant, forty (40) days in the case of the Staff, any other party may file a brief in support of, or in opposition to, such exceptions.

**ATOMIC SAFETY AND
LICENSING BOARD**

**Gustave A. Linenberger, Member
ADMINISTRATIVE JUDGE**

**Dr. Frank F. Hooper, Member
ADMINISTRATIVE JUDGE**

**Herbert Grossman, Chairman
ADMINISTRATIVE JUDGE**

Bethesda, Maryland,
July 20, 1982.

VIII. APPENDIX

Procedural Context of Our Calling Board Witnesses

Unlike the other parties to the proceeding, Staff did not accept the Board's decision to call independent experts as Board witnesses. It moved for directed certification of this ruling, primarily on the grounds that we had not adequately explained or articulated our reasons for calling these experts. Staff Motion for Directed Certif., August 7, 1981, at 1, 3, 12. Staff suggested that the Board Chairman had certain "precise questions" relating to his areas of concern that he had not posed to Staff. *Id.* at 2. It suggested that the Appeal Board "instruct" the Licensing Board to refrain from calling its experts without attempting to elicit this desired information from the witnesses proffered by the parties (*Id.* at 4), and asked for a rule that would require a licensing board to make a finding of "exceptional circumstances" before calling its own experts (*Id.* at 9, 12, 14).

Apparently acting upon Staff's representations that this Board had failed to explain adequately its reasons for calling Board experts, the Appeal Board requested our full explanation. Appeal Board Memorandum of August 10, 1981, 14 NRC at 1159. We responded, indicating that we had explained our position at transcript pages 3790-3817. Memorandum of August 11, 1981. We indicated

further that the inadequacies surmised by us did not relate to Staff's testimony but, rather, to the Staff's review as disclosed by the testimony — a matter that did not lend itself to correction merely by adducing further Staff testimony. We described the choices before us as having been (1) to close the record on the evidence already received, (2) to schedule a further hearing involving only the previously heard witnesses (whose further testimony might still be inadequate for a satisfactory record, necessitating a further delay to retain independent experts) or (3) to attempt to arrange for independent experts and further hearings with all deliberate speed. We pointed out that we had not discouraged further testimony by Staff's witnesses but had indicated that the parties would be given full opportunity to respond to any positions that might be taken by the Board witnesses and encouraged the parties to make full use of that opportunity. Finally, we offered that the experts we had selected should be in a good position to critique the Applicants and Staff's choice of modeling methods and data, about which the Board had expressed some concern (*i.e.*, the Hanks and McGuire adaptation of the Brune model and the stress drop inputs).

In response to our memorandum, the Appeal Board ordered that responses to the Staff's motion be filed and served no later than August 21, 1981 and that, on or before that same date, the Staff might file a supplemental paper in support of its pending motion, confined to the content of the Licensing Board's memorandum. Staff filed that supplement on August 21, 1981 and shifted its focus to criticisms of the Board Chairman's supposedly pejorative thoughts and accusations. We discussed Staff's criticisms in our Memorandum and Order of October 15, 1981, LBP-81-47, 14 NRC 886, 870, and will not repeat it here. Staff's memorandum also indicated that it would present the further prefiled testimony of its seismic panel by September 15, 1981.

On August 25, 1981, the Appeal Board ordered that the Staff file its supplemental testimony no later than September 15. The Appeal Board conjectured that, following the Licensing Board's consideration of that supplemental testimony, the Licensing Board might no longer find it necessary to call the independent experts. The Appeal Board's Order indicated that it would issue a further memorandum elaborating upon the matter.

On August 27, 1981, the Appeal Board issued an unpublished memorandum in which it indicated that it had not yet undertaken a review of the testimony of the parties. Appeal Board Memorandum of August 27, 1981, fn. 1 (later published in an Appendix to ALAB-663, 14 NRC 1140 (1981) at 1161). By merely scrutinizing the Board Chairman's remarks, without referring to the evidence adduced, the Appeal Board determined that any evidentiary deficiencies would appear to be amenable to resolution through further Staff review and testimony, and that the dichotomy drawn by the Licensing Board between the Staff's testimony and the Staff's review was a distinction without a difference. With a view towards the Licensing Board's reviewing the expected Staff prefiled testimony due on Septem-

ber 15, 1981, the Appeal Board laid down a standard to be applied to the calling of Board experts. The Appeal Board opined (14 NRC at 1163) that "such an undertaking * * * [the calling of Board experts] should be reserved for the most extraordinary situation in which it is demonstrated beyond question that a Board simply cannot otherwise reach an informed decision on the issue involved."

Moreover, even before reaching the point at which that suggested general rule might be applied to determine whether Board witnesses could be called, the Appeal Board suggested options that must be explored if the Licensing Board had been persuaded for one reason or another that certain of the evidence is unreliable. As stated by the Appeal Board, "among other things, the [Licensing] Board can (1) simply reject that evidence and decide the issue without regard to it (*i.e.*, on the basis of the other evidence of record); or (2) require the sponsoring party to produce supplemental testimony which is not subject to the same infirmities." *Ibid.*

With regard to this standard, we must state at the outset that we did not fully understand it. Nor did we take it to be a rule imposed on this Board. To begin with, as we later pointed out in LBP-81-47, 14 NRC 866, 874 (1981), we did not see how that standard could ever be satisfied in an operating license proceeding. Since the burden is on the applicant to establish that the safety issues should be resolved in favor of plant operation, we thought that where a Board simply cannot otherwise reach an informed decision on the issue involved, imposition of the standard would logically require a denial of the license. Consequently, we thought our reading of the Appeal Board's standard would place that standard in conflict with a number of NRC cases in which the respective licensing boards had called their own experts (see cases cited at LBP-81-47, *supra*, at 14 NRC 873) and the heretofore prevailing standard announced by the Appeal Board in *Consumers Power Company* (Midland Plant, Units 1 and 2), ALAB-382, 5 NRC 603, 608 (1977), that "the decision to call or not to call a witness for the Board must rest and does rest ultimately in the sound discretion of the tribunal alone." Moreover, the apparent prohibition against a board's calling its own expert would be contrary to the Federal Rules of Evidence, all existing judicial authority, and accepted administrative practice, as later discussed in LBP-81-47, *supra*, 14 NRC at 872.

In addition to our not being able to reconcile the Appeal Board's standard with established practice, the procedural context in which the standard was announced persuaded us that it was not intended as a ruling imposed upon this Board. As we read the standard, it appeared to track the relief requested by Staff in its motion for directed certification, that the Board be required to make a finding of "exceptional circumstances" before calling its own experts. Staff motion at 9, 12, 14. However, if the Appeal Board were deciding the matter before it, it would be expected to read the evidentiary record concerning that matter, which it indicated it had not. Memorandum of August 27, 1981 at fn. 1, 14 NRC at 1161. Furthermore, the Appeal Board had announced in both its August 25 and August 27 memoranda that

it was *not* deciding Staff's pending motion for directed certification and was holding it in abeyance. 14 NRC at 1160, 1164. Finally, we did not believe that the Appeal Board intended to issue a ruling that would, in effect, grant the Staff's motion to reverse our actions, based upon a new standard that apparently revoked its prior standard, in a manner that would effectively preclude Commission review of its action. If we then were to apply that new standard and decide not to call the experts, the matter might never reach the Commission.¹⁰

In the context of the substantive and procedural anomalies just discussed, we were uncertain of the meaning and application of the Appeal Board's pronouncements. In the very next hearing session, in fact, the Licensing Board Chairman expressed his uncertainty, as follows (Tr. 387-88):

Mr. Knotts [Applicants' counsel], if you would care to expound upon what the procedures are and what the obligations are with regard to the Appeal Board's memorandum [of August 27, 1981, *supra*], we'd be glad to hear from you but I don't think at this point that we're prepared to say anything about it and as I indicated in the conference call, there are some procedural problems and substantive problems with regard to that memorandum, but to the extent that you want to offer your positions we'd be glad to hear them, or any other party before we decide on what we ought to do further, that is orally here at hearing. We are not asking for any further briefs.

Applicants' counsel responded (Tr. 388) by indicating that he "didn't really have anything to add in that regard," and none of the other parties offered an interpretation.

As we finally interpreted the Appeal Board's actions (mistakenly, it now appears), they were designed to give us a strong indication that the Appeal Board was inclined to disagree with us as a matter of initial impression without reviewing the record, and was affording us an opportunity to reverse our own actions without risking a formal reversal. The Appeal Board's actions we thought, were taken to permit us to withdraw gracefully from a position that otherwise would likely be reversed upon a full review of the record. We found support for our view in the statements made in the Appeal Board's August 25, 1981 memorandum, that it was "possible that, following . . . [our] consideration [of the Staff's supplemental testimony], the [Licensing] Board will no longer find it necessary to resort to the independent consultants" and, "[s]hould that contingency materialize, the pending Staff motion will, of course, become moot." 14 NRC at 1160.

¹⁰ We do not discuss this matter to suggest any impropriety in the Appeal Board's handling of this matter. We accept the Appeal Board's authority to determine the propriety of its own actions vis-a-vis the Licensing Board. We merely raise the procedural aspects of this matter to demonstrate that there was considerable foundation to our considering the new standard as a suggestion rather than an unannounced order.

Staff submitted its proposed further prefiled testimony on September 15, 1981. We read that testimony and reviewed the evidentiary transcripts. We saw nothing in the further testimony that resolved our concerns with regard to the critical aspects of the seismic issues. As we read the evidentiary transcripts, we noted that, contrary to Staff's persistent assertions throughout its August 7, 1981 and August 21, 1981 submittals to the Appeal Board that any insufficiency in the record was attributable to the failure of the Board to ask appropriate questions of Staff's witnesses, we had examined Staff's and Applicants' witnesses critically and in depth on the areas of concern, without satisfaction. We had questioned critically the ground motion figures actually recorded near the site (Tr. 757-63), and the basis for Staff's acceptance of Applicants' theory that there had been an amplification of ground motion from bedrock to the Jenkinsville accelerometer because of soil and topographical characteristics (Tr. 1141-46). We had, as indicated above, suggested a further examination into the USGS records and reports regarding the Jenkinsville accelerometer (Tr. 3799). We had examined, repeatedly and critically, all of the testimony we had heard with regard to the exclusive reliance by Staff and Applicants on the H-M model and the critical input of a stress drop of 25 bars, based upon a conservative projection of a 17 bar calculation for a prior event, to calculate expected future ground motion (*i.e.*, the zero period acceleration point at which to anchor the response spectra). Tr. 861-77, 933-37, 940-46, 971-74, 1004-07, 1018-19, 1122-34, 1136-37, 1186-90, 1207-13, 1221-22.

Acting upon our mistaken view that the new standard laid down by the Appeal Board was a preliminary view based upon a cursory review of the record that might be subject to change upon the Appeal Board's full and formal consideration of Staff's pending motion for directed certification, we issued our Memorandum and Order, LBP-81-47, *supra*, reaffirming our intention of calling independent experts. With the purpose in mind of persuading the Appeal Board to reverse what we assumed to be a preliminary position and ultimately decide the issue in our favor, we marshalled authorities to support our legal position and urged the Appeal Board to reconsider its "suggested" new standard in light of the evidentiary record. As the Licensing Board then stated (at 875):

We have no doubt that if the Appeal Board were to consider the Licensing Board's decision to call expert witnesses in the context of the live facts of this case, as would be disclosed by its reading the transcript of hearing, it would reconsider proposing that new standard and would affirm this Board.

We had set these matters before the Appeal Board as respectfully as we knew how, and indicated that "we recognize the authority of the Appeal Board to decide these matters contrary to how we view them and to reverse our actions." *Id.* at 876. And, although we reaffirmed our intention of calling the Board witnesses at a further hearing, we did not schedule such a hearing pending a further issuance by the Appeal Board. *Ibid.*

We could not at that time hope to, nor did we even attempt to, comply with the standard proposed by the Appeal Board. On the basis of an uncontradicted record (later proven to be unreliable) to the effect that there had been a full disclosure to the Board of pertinent ground motion recorded near the Summer site, that the maximum ground motion recorded was 0.25g, that the 0.25g reading was an amplification by a factor of 2 of the bedrock motion because of soil and topographical effects, that the H-M adaptation of the Brune model was a reliable formula to determine ground motion which could be relied upon exclusively for that purpose, and that a maximum stress drop of 25 bars could be assumed for that area, we could not hope to demonstrate beyond question that we could not reach an informed decision based upon that evidence. Nor, even though we believed that evidence to be unreliable, did we see how we could apply the other two options proposed by the Appeal Board in its August 27, 1981 memorandum (14 NRC at 1163), to wit:

- 1) simply reject that evidence and decide the issue without regard to it (*i.e.*, on the basis of the other evidence of record); or 2) require the sponsoring party to produce supplemental testimony which is not subject to the same infirmities.

We could not simply reject that evidence, even though we considered it unreliable, because it was uncontradicted and had been reaffirmed repeatedly by the experts. Even if we could reject it, there was no other evidence of record on ground motion on which we could base our decision. Nor were there any "infirmities" that we thought could be cured by the sponsoring party's supplemental testimony. It was, as we had earlier suggested to the Appeal Board, the analysis (*i.e.*, "Staff's review") we thought deficient, not the testimony.

We were not surprised, however, to discover later that each of our concerns on these critical (to the analysis then relied upon) matters was fully justified. Although the magnetic tapes from the USGS instruments had been available to Applicants' experts (and presumably to Staff if it had requested them) through April of 1980 (Tr. 3414-16; Talwani, ff. Tr. 3407, at 2), by the July 16, 1981 hearing session, a significant event that occurred on October 16, 1979 had not been reported to the Board. The accelerometer data from that event indicated that there had been peak accelerations recorded of 0.35g, 0.36g and 0.18g for the two horizontal and one vertical components, respectively, dwarfing the 0.25g recording of the August 27, 1978 earthquake that had caused so much concern. The later event was not reported to the Board until we received a "Board notification" from Staff, dated October 20, 1981, following by one day the Appeal Board's Order of October 19, 1981 permitting us to proceed with our calling the Board experts.¹¹

¹¹ In its ALAB-663, *supra*, fn. 38, 14 NRC at 1157, the Appeal Board refers to this accelerometer data as "new seismic information" that the Staff brought to the Board's attention. The event had occurred more than two years prior to the Board notification and only the USGS's processing and the notification
(Continued)

Moreover, explosive tests and soil modelling by Applicants' experts, testified to during the later hearings in January of 1982, demonstrated that, at the frequency range from 20 to 25 hertz at which the peak accelerations for the August 1978 and October 1979 events had been recorded, there was very little possibility of amplification due to soil or topography. Finds. 36-49. With regard to the stress drop figure to be used in the H-M model, Applicants and Staff calculated stress drops from some of the newly acquired, processed accelerometer records for six events occurring after August of 1978. Using Applicants' root mean square (rms) calculation of stress drops, Staff recalculated stress drops of approximately 12, 19, 23, 42, 7 and 48 bars for the six events. Find. 27. For October 1978 and October 1979 earthquakes, stress drop estimates by Applicants and the Board experts vary from 50 to 65 bars if no amplification of the accelerometer reading is assumed. Find. 29. These calculations contradict not only the "conservative" limit of 25 bars based upon the calculation of 17 bars for the August 1978 event, but also the assumption fundamental to the use of stress drops (and hence the H-M model) to calculate ground motion, that "stress drops appropriate for estimating strong ground motion do not vary over a range of magnitudes." Appl. Ex. 4 at 4. Staff now concludes that 50 bars (the approximate maximum it calculated thus far at Monticello) is the appropriate rms stress drop to be used in estimating ground motion.¹² Staff updated testimony, ff. Tr. 5758, at 33-34. Staff's ultimate conclusion with regard to the H-M model that it is "physically reasonable but needs to be treated with caution" (*Id.* at 35), differs markedly from Staff's original, exclusive reliance upon Applicants' use of that model, of which the Board was so critical, to calculate the zero period acceleration anchor point. At the further seismic hearings in January 1982, Staff's main seismic witness retreated from any reliance upon the H-M model. After hearing the bulk of the seismic testimony, he concluded that it was not possible to come to any definitive results using Applicants' model or to determine which parameters are to be used in applying the model. He recommended that the Board look at other approaches. Find. 28.

Similarly, at the further hearings, Staff concluded that Applicants' response spectra were not appropriate for shallow RIS. Finds. 35, 82.

Although we were not surprised later that the further hearing with the participation of the Board experts thoroughly discredited the analyses of which we had been

to the Board were new at the time. The unprocessed accelerometer records, which indicated peak acceleration values of 0.35g, 0.33g and 0.15g for the two horizontal and one vertical components, were available long before then. Board notification (BN-81-32), October 20, 1981; Tr. 3415-16.

¹² To avoid confusion, we note that the Brune model is relatively insensitive to changes in stress drop inputs when used to calculate expected magnitudes. Increasing the 25 bars, used by Applicants to arrive at a 5.0 magnitude, to 100 bars, resulted in a 5.3 magnitude, for only a 0.3 difference. Tr. 1230, 5015. However, when used to calculate ground motion, the Brune model is highly sensitive to variations in stress drop as demonstrated by Chinese strong motion figures. For events at the Hsinfengkiang reservoir with calculated stress drops of approximately 10 bars, the peak accelerations were approximately one-half those calculated for the Monticello reservoir at 25 bars. Appl. Ex. 4 at 5, 12. See Tr. 5922.

critical, we were surprised by the Appeal Board's response to our decision to proceed further in calling the Board experts. Although we set forth the basis for our determination in a respectful manner and held our proposed action in abeyance until the Appeal Board could review the matter, the Appeal Board viewed that as an "open and flagrant disregard of . . . [its] instructions," and an uninvited and inappropriate "critique" of its prior memorandum. Order of October 19, 1981, 14 NRC at 1166. The Appeal Board followed with its memorandum of December 14, 1981, ALAB-663, *supra*, in which it viewed us further as having "an apparent and vexatious lack of understanding regarding the relationship of licensing and appeal boards in the administration of this Commission's adjudicatory process." As the Appeal Board explained it (14 NRC at 1149-50), we had disregarded its instructions which it had issued under the authority conferred by Sections 2.718(j), 2.785(a) and 2.785(b)(1), by which the Appeal Board was authorized to direct the certification of questions arising in proceedings before the licensing boards. According to the Appeal Board, it had issued the August 27 memorandum within this adjudicatory framework pursuant to a specific request for relief which the Staff was authorized to make and upon which the Appeal Board was empowered to act. *Ibid.*

Nowhere in this reasoning is there mention of the fact upon which we had relied in our reaffirmation order that, although Staff was authorized to request relief and the Appeal Board was empowered to grant it, the Appeal Board had explicitly declined to exercise its authority within the adjudicatory framework by accepting for ruling Staff's motion for directed certification. Under the adjudicatory framework referred to by the Appeal Board, the Appeal Board can accept a requested certification to review our rulings and in turn be reviewed by the Commission. We did not question that authority. To our regret, we did not know it had been exercised.

Beyond these fundamental matters, we see certain inaccuracies in ALAB-663 that cast us in an unfavorable light. It suggests that we arbitrarily attempted to dictate the methods to be used in the expert reports; that we denied Staff a chance to articulate its reviews; that we did not explain ours; that we decided to call independent experts to review the Staff, rather than the merits of a novel seismological issue; that we singled out the Staff for criticism; that we relied upon inapposite cases; that we misstated the law because we ignored a relevant authority; that we defied the Appeal Board by disobeying a clear order to us; that we professed an inability to handle the merits of the case; and that we forced the Appeal Board to allow us to follow a procedure that is entirely unjustified. We will attempt to clarify the record:

1. We never "declined to permit the Staff to justify its position or explore [any] matter," as stated at 14 NRC 1144. The page (Tr. 3791) cited for that proposition contained a statement, taken out of context, to the effect that we did not care to have the Staff come on "now." The preceding page, Tr. 3790, makes it clear that

we merely wanted to *first* state the Board's position. As we stated there: "We want to discuss what it is that the Board has in mind *and what the parties have to say about it.*" (Emphasis added.) The Staff followed the Board's discussion with its own comments at Tr. 3803-05, 3816-17.

2. We never stated that "the Staff should have relied on" certain means and data to determine g values, as also represented at 1144. As the page (Tr. 3793) cited for that proposition indicates, we were not satisfied that the Staff had made a determination of the best means and data to use. We asked Staff to look at other data, but admitted that, with regard to the particular kind of data that we suggested, "Maybe [they are] not good enough data to use." *Ibid.*

3. We never suggested that we intended to defy the Appeal Board and schedule a hearing with the Board witnesses testifying, to which the Staff counsel objected, as the Appeal Board suggests at 1147. Our concern was whether to voluntarily adopt a standard we thought was improper or, as we eventually did, issue an order setting forth what we believe to be proper and give the Appeal Board time to rule on the matter. The discussion with the Staff at Tr. 3888-90 related to whether the Staff could tell us when it would be *prepared* to put its witnesses on *if* the Appeal Board were to give us the green light. Staff took the position that it could not even tell us when it would be prepared until the Appeal Board decided its motion for directed certification. Nowhere did we suggest that we would actually put the witnesses on without first permitting the Appeal Board to render its decision.

4. We never suggested in the record or in any order we issued that the purpose for calling the independent witnesses was to "audit," "pass independent judgment upon," or "apprais[e]" the Staff's review, testimony or evidence, as the Appeal Board states throughout. 14 NRC at 1152, 1155, 1156. We asked the Board experts "to critique the Applicants and Staff's choice of modelling methods and data [*i.e.*, the H-M model and the data inputs to that model] about which the Board had expressed some concern" (Licensing Board Memorandum of August 13, 1981 at 3) — not to critique the Staff. In order to move the proceeding, the Board experts were asked to not begin their analyses from scratch, but to take the record as it then stood. See Tr. 4683-84. Although this procedure has been characterized as "auditing" Staff and questioning Staff's credibility, it was adopted to expedite matters and apparently succeeded in doing so, except for delays caused by Staff and the Appeal Board.

5. We never "professed [an] inability" to decide the merits of the seismic issue, as stated at 1157. As our Memorandum and Order, LBP-81-47, indicates (at 14 NRC 874), because of the burden of proof a Licensing Board can always decide the issue before it on the evidence adduced. Our position was more properly characterized by another statement at 1149 that we had given the "distinct impression" that we could reach an informed decision on the seismic issue. See, also, p. 1155.

6. We never stated that a trial tribunal's decision to call its own expert is "totally beyond appellate scrutiny" or ignored a court case to the contrary, as suggested at 1153. Any time that a party appeals an issue, no matter how flimsy the appeal, it is subject to appellate scrutiny. However, we read the case we supposedly overlooked, *United States v. Weathers*, 618 F.2d 663 (10th Cir. 1980) as approving, rather than criticizing, a district court for appointing its own expert. The question before the 10th Circuit was whether the district judge's appointment of the expert established the existence of a reasonable doubt in the judge's mind of the criminal defendant's sanity. The Court of Appeals upheld the trial court and held that it did not. In a footnote, the Court of Appeals commented on the fact that, although the judge did not follow the prescribed procedures under Rule 706 of the Federal Rules of Evidence, this did not affect its decision affirming him. While Rule 706 does not directly apply to us, we believe that we have substantially complied with it. See Tr. 3814.

7. We did not cite *Public Service Co. of Oklahoma* (Black Fox Station, Units 1 and 2), LBP-78-26, 8 NRC 102 (1978) with regard to the calling of an NRC Staff geologist or the Oklahoma officials, as the Appeal Board believes at 1153, but with regard to U.S. Army Corps of Engineer witnesses, whom we understand were called as independent Board witnesses.

8. We did not purposely ignore a material difference between this case and *Diablo Canyon*,¹³ *Seabrook*,¹⁴ *Midland*,¹⁵ and *San Onofre*,¹⁶ to wit, that in those cases the Board called witnesses that the intervenors wanted to have heard. 14 NRC at 1154-55. We believed that element of those cases to be a *negative* factor in weighing the propriety of calling the experts because it implied the Boards' use of this device to circumvent the prohibition on offering financial assistance to intervenors. It was despite this element that the Boards' decisions to call the experts as Board witnesses were considered proper — because the Boards *themselves* wanted to hear the witnesses. We considered our case as stronger, not weaker, because of the difference.

9. We never abandoned our position that there were deficiencies in the Staff's seismic review, contrary to the Appeal Board's "reasonable inference" that we had. 14 NRC at 1151. Although we referred to Staff's seismic experts in LBP-81-47 as "highly competent and credible," we indicated that their expertise did not extend to the "highly complex modelling required . . . in this unique situation involving extremely shallow reservoir-induced seismicity in the Eastern United

¹³ *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Plant, Units 1 and 2), ALAB-644, 13 NRC 903 (1981).

¹⁴ *Public Service Company of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-667, 15 NRC 421 (1982).

¹⁵ *Consumers Power Company* (Midland Plant, Units 1 and 2), ALAB-382, 5 NRC 603 (1977).

¹⁶ *Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), LBP-82-3, 15 NRC 61 (1982).

States.” *Id.* at 868-69. We did not wish to be drawn into insulting Staff’s experts in order to justify our calling Board experts.

10. We see nothing in LBP-81-47 which could justify the Appeal Board’s suggestion that we might not have fairly appraised the evidence before us if we had been ordered not to call the Board experts. ALAB-663, *supra*, at 1158. Although it may appear otherwise from ALAB-663, the tenor of our issuance was respectful—to both Staff and the Appeal Board. We do not consider a public expression of intellectual disagreement with what we believed to be a suggested standard and a skepticism about the reliability of certain expert testimony (which later proved false), to warrant questioning the integrity of this Board. If the Appeal Board believed that its new standard for calling Board experts was proper and would survive a direct challenge before the Commission and the courts, it could have reversed us with the full confidence that we would carry out its orders, fairly and to the letter, as we had indicated we would (14 NRC at 875, 876).

In the final analysis, we see only two matters discussed in the Appeal Board’s December 14, 1981 memorandum as offered in support of the statement in the Order of October 19, 1981 that there had been an “open and flagrant disregard of [Appeal Board’s] instructions”: 1) that we intended to defy the Appeal Board by scheduling a hearing with the Board witness testifying, of which we have demonstrated there is no record support (see numbered paragraph 3 above); and 2) that this Board “set forth . . . virtually no explanation respecting why an informed decision on the seismic issue could not be reached on the basis of testimony of the parties.” 14 NRC at 1149. Considering that the Licensing Board had stated that “we cannot . . . claim to have satisfied the new standard” of demonstrating beyond question why we could not reach an informed decision (LBP-81-47, *supra*, at 874), we do not see how we can be faulted for not offering those non-existent reasons.

In our opinion, there is a wide area between “the most extraordinary situation in which it is demonstrated beyond question that a Board cannot otherwise reach an informed decision on the issue involved” and “intuition and vague doubts about the reliability of the staff’s presentation” (ALAB-663 at 1156), into which this case (and probably every other case in which a Board is not satisfied with uncontradicted expert testimony) falls. Here, we were skeptical of the evidence adduced with regard to the completeness of the accelerometer information, soil and topographical amplification of accelerometer readings, the reliability of the Brune model, and the data inputs to the model (primarily the stress drop limitation of 25 bars), and had expressed our skepticism repeatedly throughout the testimony in the form of persistent and critical Board examination.¹⁷ Our skepticism was not born of

¹⁷ See Board Finding 15, *supra*, for a discussion of, and record citations to, the extensive questions raised by the Board regarding Applicants’ ground motion model.

“intuition and vague doubts,” but, rather, was based upon the many years of experience and training that led us to question whether the testimony on these matters was complete and reliable, and could be improved by these same witnesses. We did not see then, nor do we see now, how these concerns could have been articulated in the context of the interlocutory posture of the case and the uncontradicted testimony with which we were not satisfied. Although even a close reading of the transcripts would lose some of the flavor of the actual hearing, we urged the Appeal Board “to consider the Licensing Board’s decision to call expert witnesses in the context of the live facts of this case, as would be disclosed by its reading the transcript of hearing.” LBP-81-47 at 875. That the critical matters testified to proved unreliable, thereby confirming our initial skepticism, does not surprise us. We still believe that if the Appeal Board had relied less upon the allegations of Staff concerning our actions, and more upon the evidentiary record, “it would [have] reconsider[ed] proposing [its] new standard and would [have] affirm[ed] this Board.” *Ibid.*

On June 11, 1982, the Commission voted not to review ALAB-663, and issued separate views of certain Commissioners.¹⁸ CLI-82-10, 15 NRC 1377. We wish to clarify a matter discussed in the separate views of a Commissioner regarding the opinion of the Chairman of the Licensing Board Panel on the Licensing Board’s motivation for calling its own witnesses. In our view it would have been improper for the Licensing Board to have discussed its motivation with the Panel Chairman or any other person not on the Licensing Board. The Panel Chairman’s impression of the Licensing Board’s views in the matter referred to was undoubtedly based upon the views we expressed in LBP-81-47, 14 NRC 866, 874 (1981), regarding the Appeal Board’s new standard — not upon any personal discussions with us. A close reading of our discussion in LBP-81-47, *supra*, at 874, however, would indicate an agreement with the Commissioner’s position that if the applicant, who has the burden of proof, cannot establish the safety of the plant, a licensing board must deny the operating license — not resurrect it through calling its own witnesses. We also reiterate for that Commissioner our view, as fully discussed above, that we did not disregard the Appeal Board’s directives.

We also submit that our actions were consistent with the separate views of another Commissioner that the Licensing Boards should not conduct an independent technical review and should resolve the issues in dispute using first the resources of the parties. We are certain that on reading the complete record the

¹⁸ Undoubtedly the Commission is aware that a failure to review an interlocutory matter does not close the issue. Even Commission *action* on an interlocutory matter is only a final disposition if the Commission so desires. As a fundamental legal principle, all interlocutory matters, whether or not ruled upon, are subject to review at the time an appellate body reviews the final decision. Especially in this case, where the Appeal Board *accepted* the decision of the Licensing Board to call its own witnesses, albeit reluctantly, a Commission decision *not* to review the ruling need only be considered tentative by the Commission. The Commission may wish to review the question of our calling independent witnesses on a complete record, while reviewing the initial decision.

Commissioner will recognize the concerted effort made by the Licensing Board to ascertain the validity of Applicants' ground motion model and the parameters utilized therein, through repeated questioning of Applicants' and Staff's witnesses, before we resorted to calling independent Board witnesses. That Staff's further testimony filed on September 15, 1981 again attempted to justify the ground motion model and parameters, which later proved to be so unreliable, can only confirm the correctness of the Licensing Board's contemporaneous opinion that there was nothing further to be gained by continued reliance upon Applicants' and Staff's witnesses in that regard.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Ivan W. Smith, Chairman
Dr. Walter H. Jordan
Dr. Linda W. Little

In the Matter of

Docket No. 50-289
(Restart)

METROPOLITAN EDISON COMPANY
(Three Mile Island Nuclear
Station, Unit 1)

July 27, 1982

The Licensing Board issues its third and concluding partial initial decision which resolves the special restart proceeding in favor of restarting TMI Unit 1 subject to certain recommendations, conditions and a monetary penalty.

Technical issues discussed: utility's responsibility to train and examine candidates for NRC operator licenses; utility's responsibility to certify only competent candidates for NRC operator licenses; standards for maintaining and renewing operator licenses; the NRC operator licensing responsibilities; auditing of utility's operator training and examination program; the method of validating NRC operator license examination for specific plants; proctoring and grading NRC operator licensing examinations; quality assurance applied to training and testing operators; redundant assurance of reactor operator competence; reactor coolant chemistry; reactor coolant pump bearing and seals.

LICENSING BOARD: SPECIAL MASTER

Licensing Board appointed Special Master pursuant to 10 CFR 2.722(a)(2) and specified issues to be heard by Special Master.

LICENSING BOARD: SPECIAL MASTER

Licensing Board adopts as its own the evidentiary record made before Special Master.

LICENSING BOARD: SPECIAL MASTER

The Board, not the Special Master, is authorized by Notice of Hearing, regulations and statute to render Administrative Procedure Act initial decision. Special Master's report is advisory only. Board must render decision based on its own understanding of the reliable, probative and substantial evidence.

LICENSING BOARD: SPECIAL MASTER

Licensing Board affords weight to Special Master's reported direct observations of witness demeanor; but where Special Master's conclusions are materially affected by witness demeanor, Licensing Board must give especially careful consideration to whether or not other more objective witness credibility standards are consistent with Special Master's conclusions.

LICENSING BOARD: SPECIAL MASTER

Where inferences and factual conclusions depend upon the ethical orientation and expectations of the fact-finder, Licensing Board relies upon its collegial judgment but accepts Special Master's conclusions as informed advice.

LICENSING BOARD: SPECIAL MASTER

Results of hearing before Special Master and its effect upon the entire proceeding before the Board are exclusively within the jurisdiction of the Board *vis-a-vis* the jurisdiction delegated to the Special Master.

LICENSING BOARD: JURISDICTION

Licensing Board does not endorse Special Master's recommendation that NRC examination cheaters be referred for criminal prosecution, because criminal prosecution has not been shown to relate to jurisdiction granted by Notice of Hearing.

LICENSING BOARD: JURISDICTION

Licensing Board has no jurisdiction and authority to direct the NRC Staff to conduct future investigation into alleged false material statement under ruling of *Carolina Power and Light Company* (Shearon Harris, Units 1-4), CLI-80-12, 11 NRC 514 (1980).

LICENSING BOARD: JURISDICTION

Although not presiding over a proceeding noticed as a civil penalty case, Licensing Board nevertheless imposes a monetary penalty on licensed utility of \$100,000 for negligent failure to safeguard the integrity of the utility's operator examination process, failure to instill an attitude of respect for the utility- and NRC-administered examinations, failure to assure the quality of operator training instruction and negligence in the certification of candidates for NRC operator licensing. Board's jurisdiction to impose monetary penalty flows from authority set out in Notice of Hearing to require long-term measures necessary to provide reasonable assurance that Three Mile Island Unit 1 can be operated without endangering the public health and safety.

LICENSING BOARD: JURISDICTION

Upon issuing a partial initial decision, Licensing Board retained jurisdiction over a portion of the subject matter of that decision because of new information on cheating on the NRC operator licensing examination.

EVIDENCE: HEARSAY

NRC investigator's testimony that operator licensing examination candidate told him that another operator licensing examination candidate attempted to cheat, particularly in light of uncertain memories of investigator and the informing candidate, is unreliable hearsay.

EVIDENCE: HEARSAY

Rumors that an employee of Licensee cheated are the worst kind of hearsay (*United States v. Mandel*, 591 F.2d 1347 (4th Cir. 1979); *cert. denied*, 100 S. Ct. 1647; 445 U.S. 961; 64 L. Ed. 236 (1980)) and not worthy of evidentiary weight as to the truth of the rumors. Rumors may be considered, however, in assessing thoroughness of investigation and may be pursued in the interest of a complete evidentiary record.

EVIDENCE: INFERENCES

The Board finds that it is fair to draw an inference unfavorable to a suspected cheater where, as a voluntary witness, suspected cheater alone has solution to mystery surrounding his activities and fails to explain his activities despite opportunity to do so.

ATOMIC ENERGY ACT: FALSE MATERIAL STATEMENT

Certification to the NRC's Operator Licensing Branch that licensed operator has requalified based upon the known improper assistance of another operator is a false material statement under the Atomic Energy Act.

ADMINISTRATIVE DUE PROCESS

Licensing Board finds that two licensed operators cheated on company-administered license qualification examination but, because operators have not had notice of charges against them or opportunity to confront evidence because of sequestration, no action may be taken against their personal operator licenses without further proceeding. However, findings that the operators cheated are findings against the licensed utility.

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PARTIAL INITIAL DECISION (Reopened Proceeding)

I. BACKGROUND AND INTRODUCTION

2029. In its August 9, 1979 Order and Notice of Hearing, the Commission directed that Three Mile Island Unit 1 (TMI-1) remain shut down until a hearing can be conducted by this Atomic Safety and Licensing Board to determine whether there is reasonable assurance that the facility can be operated without endangering the health and safety of the public in view of the March 28, 1979 accident at TMI Unit 2. CLI-79-8, 10 NRC 141. Following the mandated hearing the Board issued two partial initial decisions (PIDs) favoring the restart of TMI-1 subject to certain conditions. However, in the PID of August 27, 1981 (LBP-81-32, 14 NRC 381, 402-03) and again in the PID of December 14, 1981 (LBP-81-59, 14 NRC 1211, 1707-11, we retained jurisdiction over issues pertaining to the quality of Licensee's management and its operating personnel because there had been cheating on an NRC operators' licensing examination. This partial initial decision disposes of that matter and related issues. It is the concluding portion of the Board's initial decision in this proceeding.²²⁶

2030. Immediately prior to issuing the partial initial decision of August 27, 1981 we had received several notifications from the NRC Staff providing the results of an investigation by the Office of Inspection and Enforcement (OIE) into allegations of cheating by two TMI-1 shift supervisors on the April 1981 NRC Senior Reactor Operator examinations. The reports also raised questions concerning the adequacy of the proctoring of NRC-administered examinations. We noted that the OIE investigations raised questions affecting the issues decided in the August 27 PID, but we nevertheless issued that decision so that, *inter alia*, the Commission could monitor further developments in the context of their relevance to this proceeding. 14 NRC at 405.

2031. Later the Licensee also brought to the Board's attention its own concern about "several cases of strong parallelism" in answers on some Licensee-administered examinations and suggested that the Board might therefore wish to reopen the evidentiary record.²²⁷

2032. On October 2, 1981 we reopened the evidentiary record to inquire into the matter and appointed Administrative Judge Gary L. Milhollin Special Master

²²⁶ The Board had also retained jurisdiction to consider motions by intervenors Union of Concerned Scientists and Steven Sholly to reopen the record of some facility modification, design and procedures issues. 14 NRC at 1222. The Board denied the motions in its order of April 26, 1982. Also carried over from the earlier partial initial decisions was the Board's consideration of how to implement the terms and conditions upon which it found that the TMI-1 may be restarted. 14 NRC at 1420. On April 5, 1982 the Board issued an order modifying and approving an implementation plan proposed by the NRC Staff. The cheating issues decided here are the only items remaining within this Board's jurisdiction.

²²⁷ Licensee's September 8, 1981 response to a Board order relative to the cheating investigation.

to preside over the hearing pursuant to 10 CFR 2.722(a)(2). Judge Milhollin was assigned the authority to inquire into twelve specific issues under the following broad issue:

. . . the effect of the information on cheating in the NRC April examination on the management issues considered or left open in the Partial Initial Decision, recognizing that, depending on the facts, the possible nexus of the cheating incident in the NRC examination goes beyond the cheating by two particular individuals and may involve the issues of Licensee's management integrity, the quality of its operating personnel, its ability to staff the facility adequately, its training and testing program, and the NRC process by which the operators would be tested and licensed.²²⁸

2033. Pursuant to the Board's directions, Judge Milhollin conducted an extensive evidentiary hearing in the reopened proceeding. On April 28, 1982 he submitted his Special Master's report to the Board. He has thoroughly explained the procedural background of the reopened proceeding and the particular issues considered by him and we will not restate them here.

2034. In this decision we adopt the evidentiary record made in the proceeding before Judge Milhollin as a part of the evidentiary record of the main proceeding. We also adopt major portions of his report as our own decision. The Board selected Judge Milhollin to be the Special Master in the reopened proceeding because of our informed confidence in his ability and fairness. Judge Milhollin is a Professor of Law at the University of Wisconsin Law School. We believe that his familiarity with education and examinations at a high academic level affords him special insight into the issues of cheating on the NRC and company-administered operator examinations and with the associated training programs. His report is thorough, well-reasoned and carefully documented. It reflects the care and thoroughness with which he conducted the hearing and weighed the evidence. We have evaluated it against our own review of the entire evidentiary record of the reopened proceeding and in light of the proposed findings submitted to him by the parties. We have also carefully considered the comments on his report made to us by the parties. His report is entitled to great weight. Accordingly we have organized our decision in the same manner so that a precise comparison can be made.

2035. In deciding how much weight to be afforded to the Report we have been guided by the overriding principle that this Board alone is authorized by statute, regulation and the notice of hearing to render the initial decision in this proceeding. Moreover, we must render this decision upon our own understanding of the reliable, probative and substantial evidence of record. We do not sit as a review board with respect to the Special Master's report, but as the initial decider. The regulations under which a Special Master may be appointed in NRC proceedings specifies that the reports are advisory only. 10 CFR 2.722(a)(3).

²²⁸ Unpublished memorandum and order of October 14, 1981, at 2.

2036. There is a subtle and sensitive relationship between the Board with its responsibility as the initial decision maker, and the Special Master as the official who received the evidence. We have identified the need for and have employed guidelines for considering the advice to the Board embodied in the Special Master's Report. Witness credibility depends most often on the substantive content of the witness' testimony, the witness' qualifications, perceived self-interest biases, and opportunity to be informed, or other objective standards. Sometimes, however, Judge Milhollin has judged credibility in part by his observation of the demeanor of the witnesses at the hearing. This reopened proceeding is unusual in NRC hearings in that it concerns suspicions of ordinary human deceit. Fortunately Judge Milhollin has very carefully noted when witnesses' demeanor is important to his conclusions. While of course we would afford some special weight to Judge Milhollin's direct observations of witness demeanor, where his conclusions are materially affected by witness demeanor, we have given especially careful consideration as to whether or not other, more objective credibility criteria are consistent with his conclusions.

2037. The Board has independently arrived at its own factual conclusions notwithstanding some conclusions to the contrary by Judge Milhollin because, as noted above, it is simply our job to do so. Moreover, some of the inferences and conclusions depend upon the judgment and the ethical orientation and expectations of the fact finders. This is particularly true where the issue is whether the evidence points to "cooperation" (Judge Milhollin's euphemism for bilateral cheating). Where judgment is material to a particular conclusion, we rely upon our collegial consensus. Nevertheless we have considered Judge Milhollin's conclusions as informed advice to us.

2038. We deem the results of the reopened proceeding and its effect upon the balance of our initial decisions to be matters entirely within our province *vis-a-vis* the jurisdiction delegated to Judge Milhollin. In our findings and conclusions of fact below, sometimes we specifically adopt or reject Judge Milhollin's findings, but on some occasions we have made our own findings directly from the evidentiary record without regard to Judge Milhollin's findings. Most of the company personnel involved in the proceeding are referred to by letter designations to protect their privacy.

II. SUMMARY OF DECISION

A. Extent and Consequences of Cheating

2039. Four cheaters have been positively identified. O and W are shift supervisors whose cheating on the April 1981 NRC operators license examination gave rise to the need to reopen the record. We find also that G and H, non-supervisory

licensed reactor operators, cheated on company-administered requalification examinations. In addition, the plant operating engineer, Mr. Shipman, admitted that he spontaneously provided an answer to an unidentified NRC examination candidate during the April 1981 exams. It is probable but not conclusive that yet another candidate may have duped WW, a shift technical advisor, into providing information useful on a company-administered examination.

2040. We also find that GG, a shift foreman, probably aided his supervisor, W, on a company exam. Mr. U, also a shift foreman, escapes censure and sanction for attempting to facilitate cheating because too many doubts surrounded the several episodes involving him. A shift technical advisor, MM, had answers suspiciously parallel to those of GG and W on one examination but the Board has not found him culpable. Mr. Husted, a licensed operator training officer, was also accused of attempting to cheat but we conclude that those charges were unsupported. And finally, in an episode without direct relevance to this proceeding, we find that VV, who was at one time Unit 2 supervisor, cheated by turning in O's work as his own in a requalification quiz in 1979, and that the TMI Station Manager, Gary Miller, falsely certified VV for license renewal despite VV's cheating.

2041. Any cheating with respect to reactor operator licensing is, of course, too much. But our warrant is to determine whether the cheating presents a threat to the public health and safety, not to sit in ethical judgment on those involved. Thus our central concern is what assurance is there that the problem has been bounded and what are the consequences of the identified cheating. Unless it were possible to know from an independent source the total extent of cheating expected to be found it would not be possible to determine whether the reopened proceeding exposed all of it. We cannot, therefore, conclude with certainty that all possible cheating has been revealed. However we are comfortable with the results of the inquiries and believe that it is probable that almost all, perhaps all, of the cheating of any important relevance to this proceeding has been identified.

2042. We based this opinion on two sets of circumstances. First, the hearing itself was a form of investigation. Two very active intervening parties had interests adverse to the Licensee. The Commonwealth of Pennsylvania was also very active and objective. The NRC Staff exercised its responsibilities. These parties and the Special Master have all collectively analyzed and reanalyzed the written answers to the relevant NRC and company-administered examinations. In addition, outside consultants employed by the Staff and the Licensee have reviewed the respective answers. Although we criticize some aspects of the Licensee's investigation, we believe that Licensee sincerely tried to uncover and report every instance of cheating. The Board itself has searched the answers for additional evidence of cheating. We believe that every suspicious parallelism has been identified and the respective authors confronted. Only a few parallelisms remain unexplained. All others have either been explained by memorization of common training materials, such as the case with S and Y, or by cheating.

2043. The second indicator of thoroughness is the testimony of the operators. They testified under a sequestration order, *i.e.*, they were excluded from the hearing room when not testifying and not permitted to share information with other witnesses. As we would fully expect, the company witnesses generally did not point accusing fingers at each other. What is significant, however, is that the witnesses were willing to recount “rumors” about cheating or, as in the case of U, offers of aid in cheating. This “rumor” testimony became repetitive and was finite. The rumors were pursued by the litigating parties and Judge Milhollin. Thus we believe that the examination candidates themselves reported as “rumors” most or all of the cheating that was obvious enough to be observed. Our attention has been drawn to the cheaters. But the point too easily overlooked in this proceeding is that some thirty to forty licensed members of the TMI-1 operating staff did not cheat, even though they easily could have — particularly on the company-administered requalification exams. We have not adopted the Special Master’s finding (Report at ¶325) that the “. . . overall integrity of the operations staff has been found to be inadequate.” To the contrary, our overall impression is that, as a group, they have performed well under very demoralizing and stressful circumstances.

2044. The intervening Aamodt family suggested that a search for parallelisms would not reveal all instances of cooperation in that the candidates may merely have exchanged the ideas underlying the answers, therefore more cheating must have occurred. This tends to be a philosophical argument which we have not accepted. There is no warrant to assume that the candidates cheated simply because the opportunity existed. In the case of the company-administered examinations the better assumption is that rational candidates would use the qualification exams as a preliminary test of their ability to pass the NRC operators’ licensing examinations. Their jobs depended upon it. This reasoning would not prevail with respect to the NRC examinations however. But as a result of the cheating on the April 1981 NRC licensing examination, each of the candidates was reexamined in October 1981 under the most strict and reliable testing procedures ever employed by the NRC.

2045. We see no safety consequences resulting from the cheating episodes. The results of the October 1981 NRC licensing reexamination have not been received into evidence although they were served upon the Board and parties. It appears that enough candidates to staff the plant have survived, but we have not, for want of information, analyzed all aspects of present staffing plans. It is sufficient that Licensee’s management has reconfirmed its commitment to abide by License Condition 9 imposed by the Board in its first Partial Initial Decision. Licensee Proposed Finding ¶408. Condition 9 details the staffing requirements for TMI-1. See 14 NRC at 580-81. We expect that condition to be enforced, and if it is, there will be no adverse operating safety consequence flowing from the actions of those candidates who cheated on the examinations.

B. Management's Involvement in Cheating

2046. The Special Master concluded that Michael Ross, TMI-1 Manager of Operations, deliberately prevented proctoring during the April 1981 NRC licensing examinations. He also found that Mr. Ross improperly and in bad faith induced or attempted to induce the NRC licensing examiner to broaden the answer keys on that exam so that he, Ross, and other test candidates could unfairly attain enhanced scores. The Board, however, comes to the opposite conclusion. We find that the accusation that Mr. Ross impeded proctoring was incredible and that the accuser's testimony on that issue was unreliably ambiguous. There were two examination questions giving rise to the charge that the respective answer keys were improperly broadened. Our own analysis of the changes proposed by Mr. Ross convinced us that, on one question, the change was arguably correct and, on the other, the proposed change, although not literally correct, was not unconscionable and could not be attributed to bad faith. Mr. Ross was the highest-level member of TMI-1 management whose ethical conduct was questioned, and we conclude that all of the charges against him were unfounded.

2047. Mr. Shipman, the plant operating engineer, came forward with information that, during the April 1981 NRC examination, he spontaneously provided a short answer to one of the candidates. Mr. Shipman is an important member of the TMI-1 management. He has been reprimanded by Licensee for his role in that episode. Neither Judge Milhollin nor the Board regarded Mr. Shipman's intent to be cheating. However we find that his testimony denying that he recalls the identity of the involved test candidate is probably not truthful, but the inference that he is untruthful is not so persuasive as to warrant additional sanctions against him. It was also significant that as a result of this incident there remains an unidentified cheater on the TMI-1 operating staff. And it is particularly noteworthy that the cheater apparently felt free to ask a member of management to assist him on the examination. As a result the Board was especially concerned as to whether there was evidence that Licensee's management condoned or aided cheating. There were also rumors that U, a shift foreman, was stationed by management to aid the candidates in the April 1981 NRC examinations, but the Board's conclusion is that if U in fact did offer aid on that examination, it was his own undertaking. We find no evidence that Licensee's management encouraged or condoned cheating on the relevant NRC or company-administered examinations.

2048. A possibly serious reflection on the integrity of Licensee's management centered around an episode without direct relevance to the cheating related to the reopened proceeding. In 1979 Mr. John Herbein was a Metropolitan Edison Company vice president, Mr. Gary Miller was the Three Mile Island Station manager, and VV was the Supervisor of Operations for Unit 2. We found that in 1979 VV tried to pass his operator's license requalification test by submitting the work of O as his own. With definite knowledge that this was the case, Mr. Miller,

with the informed assent of Mr. Herbein, certified to the NRC's Operator Licensing Branch in August 1979 that VV had requalified as a reactor operator. This certification was based in part upon the score achieved by VV with O's assistance. We have concluded that this certification is a false material statement, and that Mr. Miller's testimony does not satisfactorily explain his actions. The Board has recommended an investigation.

2049. Subsequently Mr. Herbein became the Vice President of the General Public Utility Nuclear Corporation's Nuclear Assurance Division but recently was transferred from GPU Nuclear to a non-nuclear assignment. Mr. Miller is now the GPU Nuclear Director of Startup and Testing and the Board has imposed a condition limiting his activity at TMI-1 until the matter can be resolved. VV no longer performs licensed activities and has not held a Unit 1 license during the times relevant to this proceeding.

2050. The information concerning VV and his certification to the NRC was first brought to the attention of the NRC at the direction of Robert Arnold, President of GPU Nuclear Corporation. We believe that it is representative of the Licensee's efforts to make a full disclosure on all matters of possible relevance to the cheating incidents. We have also found that Licensee's handling of the matter with respect to VV was satisfactory. However, there was no evidence presented as to whether the Licensee has taken, intends to take, or should take any personnel action against any other employee involved in the certification incident.

2051. The reopened proceeding produced no other evidence of management involvement in cheating.

C. Licensee's Response to the Cheating

2052. Licensee responded to the cheating revelations by investigating the circumstances surrounding the cheating on the NRC examinations, investigating its own company-administered examinations, disciplining errant employees, meeting with and explaining to employees the company's policy on training and testing integrity, upgrading its procedure for certifying license candidates to the NRC and by participating in this proceeding. The Licensee also has made major changes in its company training and testing program, a response which we discuss separately below.

2053. In its investigation of the cheating incident the Licensee concentrated on possible cheating on its own initial qualification and requalification examinations. We have evaluated this investigation as to whether it was well conceived, whether it was pursued with sufficient resources and good intentions, whether it was properly executed, and whether it was successful. In general we believe the Licensee conducted an adequate investigation.

2054. Licensee employed two technical consultants from Pennsylvania State University, Harrisburg Campus, to analyze for suspicious parallelisms the

answers given on its company-administered examinations. Licensee assigned a company attorney, Mr. John Wilson, and his associate to investigate the parallelisms identified by the technical consultants. The investigation also involved the very active participation of GPU Nuclear President Robert Arnold, GPU Nuclear Vice President for TMI-1 Henry Hukill, and GPU Nuclear Vice President Richard Wilson. The participation of these high-ranking officials imparted prestige and force to the inquiry, and we assume that it demonstrated to the operating staff of TMI-1 the fact that management regarded the matter to be important. We found no evidence that Licensee stinted on the resources expended in the investigation. In general we concluded that the investigation was well designed and had sufficient resources allocated to it. However, we faulted the Licensee for not having a single official or clearinghouse responsible for overseeing the thoroughness of the inquiry.

2055. We are also critical of the execution of the company investigation, particularly the inquiry by the attorney, John Wilson. He was naively convinced that G and H did not cheat, he was insufficiently formal in his interviewing of the candidates, he did not employ technical assistance in assessing the explanations given by suspected cheaters. Apparently because of insufficient direction, some investigatory leads were not pursued. We also criticize the Licensee for deferring to and relying upon the NRC to investigate some of the leads, because we believe that the Licensee had its own responsibility to explore every promising lead. However, we recognize that time was limited. After the hearing began a sequestration order was in effect, and no further investigation of company personnel was feasible. Moreover, we recognize that not all possible leads could be pursued nor their significance promptly appreciated. Our criticism has had the benefit of looking back over a very large evidentiary record where weaknesses have been highlighted by the parties and the Special Master.

2056. Our major criticism of the execution of Licensee's plan of investigation was that higher-ranking company officials uncritically accepted the results of the investigation by the attorneys. We believe that a competent technical reviewer would not have been convinced by G and H that they did not cooperate on the company-administered examinations. However, we cannot find that Licensee's investigation was unsuccessful. After a thorough scrutiny by the parties at the proceeding, Judge Milhollin, and after our own review, only a few additional suspicious parallelisms were identified beyond those disclosed by the Licensee's Penn State technical consultants.

2057. Licensee also responded to cheating by taking appropriate personnel action. It requested and received the resignations of O and W; placed a letter of reprimand in Mr. Shipman's personnel file; removed VV from supervisory and licensed duties in an action that has functionally demoted him. Licensee took the position at the hearing that G and H did not cheat and, while we question the logic of that stand, we do not question its sincerity. Therefore Licensee has taken no

action adverse to G and H, a matter which we address below under our discussion of remedies. In instances where the Board itself finds the evidence inconclusive as to a particular employee, such as in the case of U, we cannot fault Licensee's management for not taking personnel action. In general we have concluded that where Licensee has seen the need and the justification for personnel action, it has taken it. However, as we have noted elsewhere in this decision, the record is silent as to whether the Licensee has taken or should take any personnel action as a result of the improper certification of VV's requalification to the NRC in August 1979.

2058. Either Mr. Arnold or Mr. Hukill, sometimes both, have met with all members of the TMI-1 operating staff, all together, by shift, and individually, in a discussion of cheating, and by written directions management has attempted to explain why, over the resistance of the operators, objective written assurance of operator competence is essential. Widespread resentment toward the need for reexaminations of TMI operators prevailed. The Board has no way of knowing whether this resentment continues. If Licensee continues to monitor the situation, we can think of no further helpful efforts, except as we note below, to bring this aspect of the proceeding to a fair and prompt conclusion.

2059. Licensee had in its possession sufficient evidence that O and W, and in our view, VV, should not have been recertified for licensing and concedes that it can be legitimately criticized for not having a formal process and a written procedure for operator qualification certification. The Board finds that the Licensee was negligent in its operators' license certification procedures. Licensee has now committed itself to establish such a procedure, including a written statement from the training department, which we believe will foreclose the certification of technically incompetent candidates, and those known to be ethically unqualified, for operator licenses. This conclusion depends, of course, upon our confidence that the present management of TMI-1 would carefully follow its formal certification procedures.

2060. It is also the Board's view that the Licensee has cooperated fully in the reopened proceeding. While we disagree with the Licensee in several areas, in general Licensee has recognized and candidly conceded the weakness of some of its programs, particularly in training. It readily produced its employees for examination by the parties, and we could discern no reluctance to come forward with all relevant information. In fact, the episode involving the requalification certification of VV arguably need not have been revealed by Licensee in this proceeding because it is only indirectly related to its subject matter. We have discounted the allegation that company management attempted to interfere with the NRC investigation by seeking to be present during employee interviews. We found, rather, that management had a legitimate purpose in trying to be present; the company's legitimate purpose and the NRC's purposes conflicted, but the matter was appropriately resolved.

D. Management's Responsibility for Cheating; Training and Testing Program

2061. The reopened proceeding was not intended to relitigate the substantive quality of the Licensee's training program, *i.e.*, the course content, nor has the evidence brought its adequacy into question. The official NRC operators' licensing exam continues to be the principal test of operator competence and the adequacy of the company's operator training program.

2062. The reopened proceeding was concerned first with the adequacy of the company's attitude and administrative procedures to guard against cheating, and, second, a closely related subissue — whether the instruction methods were a contributor to the cheating.

2063. The evidence is undisputed and Licensee admits that the Licensee's past testing procedures were loose; there were no established procedures to assure that exams and quizzes were administered properly. It was not clear to the operators that cooperation on quizzes was not acceptable. No specific instruction not to cheat was given. Proctoring was uneven, frequently very poor. The use of unproctored, take-home exams permitted cooperation. Sometimes instructions were unclear as to whether quizzes were to be open- or closed-book. Some quizzes actually were answered as a group effort in that the concept of working as a crew was encouraged. Licensee has made an unusually open and candid acknowledgment of its responsibility and fault for the cheating on the examinations. Management simply did not think to institute procedures and other administrative safeguards for guarding against cheating on exams. Moreover, Licensee was culpably negligent in failing to install in its operating staff a sense of respect for its training and testing program. This admission is not only forced by the facts, but, in our view, the admission itself is a necessary foundation for any confidence that the TMI training and testing program will be brought to an acceptable quality.

2064. Mr. Hukill, Vice President of TMI-1, stated the reaction of company management rather well in his testimony. He admits to feeling somewhat naive, and in view of his position as the senior person at TMI-1, he accepts the responsibility for the cheating. He explained that, as a graduate of the Naval Academy and after many years on active Navy duty, mostly with nuclear power and submarines, an understanding of the absolute need for total honesty and trustworthiness has been ingrained in him; that in the Navy the safety of the ship and crew depended upon honesty and integrity. Mr. Hukill came to TMI-1 assuming that the people there were trustworthy. Hukill, ff. Tr. 23,913, at 2-4.

2065. Mr. Arnold, President of GPU Nuclear, points out that his management must and does inherently rely on the honesty of others, and that he has assumed a basic honesty in his operators, an assumption which, despite the cheating events, has been justified by his experience, and which prevails today. Arnold, ff. Tr. 23,580, at 4.

2066. The Board recognizes that trust in the integrity of others is an essential part of every complex undertaking in our society, but we also believe that Licensee correctly understands that its management was naive and negligent in not guarding against cheating in its training and testing program. We also recognize that trustworthy persons tend to be more trusting of others, and we make no conclusions of bad faith or inherent incompetence in upper-level TMI-1 management from the cheating episodes.

2067. Operator requalification and testing was required by Short Term Item 1(e) of the Commission's August 9, 1979 notice of hearing in this proceeding. 10 NRC at 144. Satisfactory retraining and testing was an essential predicate to the Board's conclusion that the TMI-1 can be restarted without unreasonable risk. In our decision below, we score the Licensee severely for suggesting that it never represented to the Board that consideration had been given to establishing procedures against cheating, thus there is no unfulfilled promise to establish testing administrative procedures. We find that the assurance of testing integrity had been implicit if not explicit during the main hearing.

2068. The Board is now satisfied that the administrative procedures now in place, as supplemented by an additional Board-imposed requirement, are well designed to protect the integrity of the company-administered examinations. They must be enforced, however; thus we are not satisfied that the new procedures alone are adequate. Therefore, we impose an additional condition on restart of TMI-1 which requires an independent auditing of the requalification and testing program during a two-year "probationary" period; internal auditing procedures at the point of training delivery; and the establishment of criteria for the qualifications of training instructors.

2069. The last condition, criteria for instructor qualifications, goes beyond the safeguards against cheating or other defeats of the training examination, but goes directly to the quality of the training instruction. This additional remedy, while not directly related to cheating, is nevertheless within our preserved jurisdiction because the evidence indicated that weaknesses related to the quality of instruction, the expectations of the instructors and the accuracy of grading contributed to disrespect for the examinations. Moreover the failure of the training staff to follow through on reliable and trusted examinations is in itself an indicator of instructor incompetence. Further, the evidence pointed to the importance of the training personnel in the certification of candidates and in the review of the NRC operator's license examination questions and answers.

2070. As we explain in detail in arriving at the ultimate conclusion in this proceeding, there was a failure to fix precisely within the company the responsibility for preserving the integrity of the training and testing program, and in particular, there was a failure to extend quality assurance and quality control concepts to the training program.

2071. Finally, to bolster Licensee's resolve to correct its training and testing program, and to assure that the lesson learned from the cheating episodes lingers long in management's memory, we suggest the imposition of a monetary penalty principally as a result of Licensee's negligence in failing to safeguard the integrity of its training and testing program.

E. The NRC Examination

2072. The NRC Staff concedes that the Staff was lax and that its procedures were inadequate during the April 1981 NRC operator licensing examinations. New procedures which cover proctoring and grading are in effect, and were employed during the October 1981 reexamination of the TMI-1 control room operators. These procedures are sufficient to assure the integrity of the administration of the operator license exams.

2073. We preserved jurisdiction over the substantive content of the NRC examinations only to the extent that the questions are amendable to cheating or other evasive devices. Accordingly the parties did not litigate the substantive adequacy of the NRC examinations, and our conclusion expressed in the August 27, 1981 PID that the NRC examinations are the basic assurance of operator competency remains undisturbed. We believe, however, that greater assurance of the quality of the Licensee's training is required to comply with the Commission's regulations.

2074. In reviewing some of the NRC examination questions to determine their amenability to cheating, the Special Master and members of the Board could not help but note problems with their substantive content. We once had jurisdiction over whether the NRC reexamination was a sufficient assurance of public health and safety, and even though jurisdiction has now passed, the Board feels it is appropriate to pass along our concerns and to note that the Special Master has perceived problems with the exams. This we have done in our findings. We do not, however, adopt the Special Master's conclusions nor do we arrive at any factual conclusions as to the substantive adequacy of the operator licensing exams.

2075. The Special Master was concerned that the exam answer keys conformed to training information, not necessarily plant information; answer keys sometimes were obsolete; and that questions called for very specific design information which would require excessive memorization. Some of the operators who testified complained that the questions did not fairly test their ability to operate the plant.

2076. While we tread lightly in this area because the record on the subject is far from complete, the Board would like to lend its support to the Staff's efforts to reevaluate the entire examination process, not just the written portion.

2077. The failure of the utility in this case to safeguard the integrity of its training and testing process highlights the need for the NRC to have an operator licensing program which is the best possible test of operator competence and the

adequacy of the utility's training programs. It is also important that the control room operators themselves have a high respect for the relevance of the examination to actual plant operations and conditions.

F. The Staff's Investigations of Cheating

2078. The NRC Staff conducted four investigations into the cheating events. In general we found that the Staff's investigating response was thorough and adequate. In several instances the Board would have approached the investigation differently, however. The Staff should have interviewed specifically the eight persons who were the only possible exam candidates who could have sought an answer from Mr. Shipman. One OIE investigator concluded that Mr. Husted tried without success to seek an answer from P during the NRC examinations. Since the effort was unsuccessful, OIE decided not to include the matter in its written report of the investigation. As it turned out the Board found that Mr. Husted did not solicit the answer, so the omission would not have affected the outcome. Nevertheless, a perceived unsuccessful cheating effort was clearly relevant to the reopened proceeding.

2079. We have also expressed some concern that the investigating staff accepted without full inquiry the Licensee's opinion on cheating on company-administered exams. This is the opposite side of the coin from faulting Licensee for leaving it to the NRC Staff to investigate certain areas involving Licensee's employees. Each organization had an independent responsibility to make a thorough inquiry.

2080. On the other hand we also recognize that the NRC Staff did not have time or resources to follow every lead. Because of the hearing and the sequestration order, the Staff, as was the case with Licensee, could no longer investigate. The significance of certain episodes may not have become apparent until later. In sum, we recognize that our criticism of the Staff investigation is influenced by hindsight, and we have no basis to question its results.

G. Overall Conclusions

2081. The Board has reviewed its partial initial decision on management issues which included our conclusions on the Licensee's training program to determine whether the Board itself was naive in believing evidence that Licensee had an adequate program. We were convinced, and remain convinced by a blue ribbon panel of experts that the operator requalification program was well-conceived. Licensee had recruited a management staff with outstanding professional credentials and experience to administer the program. Management was unstinting in the

resources devoted to the training program and a rational implementation plan was in place.

2082. Our conclusion is that the integrity of the Licensee's training and testing program failed because there was not a clear appreciation of which portion of Licensee's management had the responsibility to safeguard the program and because there was a failure to apply the principles of quality assurance and quality control to the testing and instruction process.

2083. We concluded in our management partial initial decision that Licensee had a sound organizational approach to the training function *vis-a-vis* the operational function. The line managers of Unit 1 were to be relieved of all unnecessary duties, including responsibility for training, so that they could concentrate on their operational responsibilities. Training was placed in a corporate-level division under John Herbein, Vice President for Nuclear Assurance. Training responsibility was also at the corporate level in the Training and Education Department within the Nuclear Assurance Division. The Nuclear Assurance Division, which also houses the Quality Assurance, Nuclear Safety Assessment, and Emergency Planning Departments, was to have provided independent off-site and on-site assurance that its respective functions maintained the expected quality — with the appropriate input of the line managers.

2084. The Board has concluded that the cognizant officials in the Nuclear Assurance Division failed to recognize that training is an activity which must comport to the concepts of operational safety quality control as set out in Appendix B to Part 50. For example, we cited with some concern the fact that the Director of Training, in establishing new procedures to safeguard the integrity of the training examinations, even now has failed to include a provision for sampling or auditing test answers for evidence of collusion — a step found necessary by the NRC Staff to assure the reliability of its licensing examinations.

2085. We note in our conclusion below, however, that despite the failure in the quality assurance of the examination process, we have not found that the TMI-1 operators are incompetent. Most were already licensed before the hearing began, and have since had to prepare for two additional NRC licensing examinations. Although we have found weaknesses in the quality of instruction, we have not found that the instructors failed to instruct or that the students failed to learn. The operators have been repeatedly exposed to appropriate course material. Having also found that the operators have been reexamined by the NRC under appropriately controlled conditions, and that the Board-imposed condition for staffing the unit will be met, the Board rejected the demand by Union of Concerned Scientists that restart authorization be withdrawn.

2086. Although the Board believes that the Licensee is capable of and intends to correct the problems revealed in the reopened proceeding, we impose, or recommend the imposition, of a \$100,000 monetary penalty for the negligent failure of Licensee to safeguard the integrity of the examination process, because it

failed to instill an attitude of respect for the company and NRC-administered examinations, because it failed to assure the quality of training instruction, and because of negligence in the certification of candidates for NRC operator licenses.

2087. The Board could not walk away from the cheating by G and H, and we believe that the record demands a further investigation of the circumstances surrounding the certification of VV in 1979. However, we acknowledge that we are terminating our part of this proceeding without bringing every miscreant to justice, and without resolving every uncertainty. There are individual due process considerations for allowing matters to rest as they are, and we have no confidence that further inquiry will produce a more reliable record than that made in the hearing before Judge Milhollin.

2088. Moreover, we are concerned that further proceedings would be disruptive. The restart proceeding was necessary in the broader public interest, but the effect of the Notice of Hearing was to revoke the existing operators' licenses of the TMI-1 control room staff without due process. The large honest majority of the operators were denied the fruits of passing the first NRC reexamination by the need for the second reexamination in October 1981; and they were held up to public derision by no failure of their own to safeguard the integrity of the NRC and company-administered examinations. With substantial justification, they have become embittered about these events. They should now be permitted to return to the important matter of preparing the unit for operation without further distractions.

2089. Finally, the Board concludes that the issues in the reopened proceeding have been resolved in favor of restarting TMI-1, and our conclusions to that effect in the first two partial initial decisions remain undisturbed.

III. FINDINGS OF FACT AND DISCUSSION OF THE REPORT

A. The Extent of Cheating

O and W (Report at ¶¶10-25)

2090. O and W were shift supervisors who cheated on the April 1981 NRC's operator examinations. O's denials at the hearing were incredible. W acknowledged his involvement. It was their cheating which initially required the record to be reopened. Judge Milhollin explains how very important shift supervisors are to the safe operation of the facility; that they are in charge of the reactor when on shift. Report at ¶10. In addition, if it is on an evening or night shift, it is likely that the shift supervisor would be the senior utility official at the facility. In the event of an emergency the shift supervisor becomes the facility Emergency Director with the

responsibility to initiate immediately and unilaterally emergency actions and to make protective action recommendations. *See* December 14 PID, 14 NRC at 1469.

2091. Not only did O and W cheat, but they cheated extensively — on company-administered exams, and on both the Reactor Operator (RO) and Senior Reactor Operator (SRO) examinations administered by the NRC in April 1981. Most of their answers on the NRC examinations were identical or nearly so. Report at ¶¶11, 12.

2092. Although O and W resigned as a result of their misconduct, their role in these episodes has not been mooted by their departure as Licensee and the Staff state. Judge Milhollin concludes that their blatant cheating was probably observed by others, although in fairness, he does not impute such knowledge to other particular candidates. *Id.* at ¶24. He also notes that their conduct could not build respect for the licensing requirements among the operators they supervised. *Id.* at ¶14. Judge Milhollin's major conclusions with respect to O and W are reasonable and fair. We adopt them.

2093. We do not, however, endorse Judge Milhollin's recommendation (Report at ¶310) that O and W should be referred for criminal prosecution. Judge Milhollin's recommendation is an appropriate one for him to make in that, as a citizen well informed in the facts, he has been offended by what he perceives to be criminal conduct in a serious safety matter. We note however that his recommendation depends largely upon the "unrepentant" attitudes of O and W (an attitude which, by the way, we did not sense in W's testimony). *Id.* Our only jurisdiction and official interest in this proceeding is the safe operation of TMI-1, not the rehabilitation of O and W who are no longer employees of the Licensee. There is no record basis upon which we can determine that a deterring effect upon those still employed at TMI-1 would be realized by the prosecution of O and W, over and above the deterrent flowing from the fact that O and W were separated from their employment in disgrace. To the contrary, there may be a positive and needed benefit to employee morale at TMI in putting the O and W incident into history, but here again we have nothing but subjective surmise for that assumption.

2094. The Commission does not need our advice on whether to seek the prosecution of O and W; it is a policy and ethical consideration. In any event, because of considerations of compassion alone, this Board may not have been able to arrive at a collegial recommendation, and we have not attempted to do so.

2095. We note also that the Office of Inspector and Auditor, the cognizant NRC component, has already discussed this matter with the Department of Justice. The Department is not interested in a criminal prosecution absent something major of a conspiratorial nature. Tr. 25,345-46. There is no evidence of any conspiracy in the events surrounding O and W beyond the cooperation between them.

G and H (Report at ¶¶26-77)

2096. G and H are control room operators. Licensee's consultants, Mr. Trunk of Pennsylvania State University and his colleague, discovered many identical or nearly identical answers to questions given on company-administered weekly quizzes. Some of the questions pertained to training and testing required by Item 1(e) of the Commission's hearing order relating to "lessons learned" from the accident. 10 NRC at 144. The only credible explanation to many of these similar or identical answers is cooperation. Other similarities were noted during the hearing. In its own evaluation of the record, the Board itself identified an additional similarity suggesting cheating as we discuss at ¶2104 n.229 below.

2097. Judge Milhollin concludes on the basis of five sets of nearly identical responses that impermissible cooperation must have taken place between G and H. As to four of these sets the Board agrees.

2098. The first set related to "human factors, operational safety". Report at ¶¶33-37. The similarities suggested cooperation as Judge Milhollin completely explains. But, to be fair, Judge Milhollin cast around seeking whether there was another possible explanation for the similarities (*i.e.*, memorization from common-source answer keys) but could find none. Report at ¶37 *citing* G at Tr. 25,750. Licensee disparages this effort in its Comments and argues that, since the testimony by G evaluated by Judge Milhollin is not reliable, he should not have ruled out common memorization of the identical answers. Comments at ¶9. Licensee's analysis does not address Judge Milhollin's reasoning. Licensee seems to be arguing that if Judge Milhollin could not find a benign cause for the answer similarities in the cited testimony, and if that testimony is unreliable, he therefore must not rule out a benign cause, and must infer a benign cause. *Id.*

2099. We cannot accept Licensee's argument. Judge Milhollin simply looked at the only place known to him for possible common-source memorization and found nothing to negate his finding of improper cooperation. Licensee goes on to suggest that the better conclusion is that G and H had the identical answers drummed into them from the training lesson plan, but the citation to John Wilson's testimony (Tr. 24,514-15) does not support that thesis. We adopt Judge Milhollin's conclusion that G and H cooperated on their "human factors, operational safety" answers.

2100. Another set of nearly identical answers analyzed by Judge Milhollin were G's and H's responses to a requirement to discuss the contributors to the generation of hydrogen gas following a LOCA. Report at ¶¶44-48. G and H gave identical incomplete and incorrect answers on two quizzes in that they failed to explain that hydrogen gas is generated by two reactions; one involving aluminum and sodium hydroxide, the other zirconium and water. Judge Milhollin's analysis is logical and complete. He concludes that they cooperated.

2101. Licensee’s explanation (Proposed Findings at ¶¶64-68) depends upon a weak chain of improbable circumstances: that G had a tendency not to write complete answers; that when the instructor wrote the missing partial answer, “NaOH” (sodium hydroxide) on their papers in grading the first exam both G and H then incorrectly assumed that “NaOH” was the complete correct answer when faced with the same question on the second exam; that frequent study sessions together reinforced their independently arrived-at misconceptions. *Id.* We adopt Judge Milhollin’s conclusion that G and H cooperated on the hydrogen generation answers.

2102. The third set of nearly identical answers leading Judge Milhollin to the conclusion that G and H cooperated responded to a question requiring a list of process lines which are isolated on a reactor trip. Report at ¶¶49-52. The similarities and identical order of listing in G’s and H’s answers are quite striking:

G	H
MUV-3 letdown	MUV-3 letdown
WDG-V 3,4	WDG-V-3,4 Gas
WDL-V-304,303	WDL-V-303,304 (illegible)
WDL-V 534, 535	WDL-J-584, 534 R.B. Sump
AHV 1A,B,C,D	AHV-1A,1B,1C,1D R.B. Purge
CAV 1,2,3,13	CA-V-1,2,3,13
CAV 4 A/B, 5 A/B	CA-V-4 A/B, 5 A/B
CAV 189	CA-V-189
CFV 19 A/B, 20 A/B	CF-V-19 A/B Sample, 20 A/B (illegible)
CFV-2A,2B	CF-V-2A/2B sample
 Licensee Ex. 66E.	 Licensee Ex. 66F.

2103. These answers did not appear in that order in any written materials nor were they taught in that order during training. G testified that in fact he had not memorized the answer from an outside source but that he and H, studying together, organized the items on the list in the order of importance then both memorized their work. Tr. 25,765. Competent witnesses corroborated that the list was in the order of importance except for one item. Therefore G’s testimony was a logical and benign explanation for the identical order of listing by both candidates. The trouble is, however, that H could not match G’s explanation when, under the sequestration order, he later testified. At first he simply could not remember. Tr. 25,898. Then he suggested that the process lines were listed more by system than by importance. Tr. 25,937. He had no memory of why he memorized the list in the sequence given in the exam answers. *Id.* Judge Milhollin concludes that if H had in fact studied with G, and if they had analyzed and rearranged the items in the sequence used by both of them in the exam, then memorized that exact sequence, H should have been

able to remember those events and to explain them. We agree. The compelled conclusion is that they cooperated during the exam.

2104. The Bernoulli's equation answers are the fourth set of nearly identical responses which the Board finds clearly establish cooperation between G and H. See Report ¶¶58-66. Again, a visual examination of the answers as written by them on the exam demonstrates the remarkable similarity in the responses, even to some spacing and punctuation.

G

Bernellis [sic] equation is the general energy equation, it states that the total internal energy of a system is equal to the gravitational potential energy plus total kinetic energy of the system plus the system internal energy. Licensee Ex. 66A.²²⁹

H

Bernoulli's equation is the general energy equation, it states that the total internal energy of a system is equal to the gravitational potential energy of the system plus the total kinetic energy of the system plus the system internal energy. We can use it to calculate flow by references to points in system and determine energy differences (work). Licensee Ex. 66B.²²⁹

2105. The last sentence in H's answer responds to the second part of the question. G's answer is incomplete. Judge Milhollin had made a very careful analysis of these similarities and concludes, as does the Board, that cooperation seems to be the only explanation.

2106. Licensee urges the Board to read with particular attention its proposed findings on the Bernoulli's equation issue at ¶¶70-83. We have done this, but, even accepting Licensee's version of the evidence, we remain unconvinced that the nearly identical answers are from common-source memorization. After a careful search, no training material could be found to explain the answers. Licensee Proposed Finding ¶72. G was sure he had memorized "cold" the answer from material common to him and H but couldn't remember the source. Licensee Proposed Finding ¶76. H however, could not remember studying with G, but became increasingly positive that the answer was on a blackboard during training. Licensee Proposed Finding ¶78.

²²⁹ Judge Milhollin and the parties may have overlooked an additional significant similarity. In the first sentence of both responses, the word "equation" is followed by a comma. The correct and commonly understood punctuation is either a period or a semi-colon. In looking at the relevant exhibits we were frequently struck by non-substantive similarities in punctuation and spacing. Compare Licensee Exhibits 66A with 66B; 66C with 66D; 66E with 66F; and 66G with 66H.

2107. Licensee's witness Trunk suggested that other answers appearing on the same answer sheet were not copied, therefore the Bernoulli's equation probably was not copied. Licensee Proposed Finding ¶81. We demur. There is no suggestion that G and H are compulsive copiers. They would copy only where necessary.

2108. Mr. Trunk also believes that, if G had copied from H, he, G, would have copied the last sentence; that H understands the Bernoulli's concept and would have no need to copy from G. G could not duplicate or explain his Bernoulli's answer when he testified. Tr. 25,773. G also misspelled "Bernoulli's" in his answer. Mr. Trunk's analysis persuades us only that H did not copy from G. The fact that G did not copy perfectly or completely does not obviate the remaining unexplained similarities in the answers. We conclude that G and H cooperated on the Bernoulli's equation answers.

2109. We disagree with Judge Milhollin, however, as to the firmness of his conclusion with respect to the responses to the question "[W]here are the new [TMI-1] radiation monitors located?" Report at ¶53 and ¶54. Both operators answered that the monitors are located in the control room — an answer deemed to be wrong in that the monitors are said to be in other portions of the plant. *Id.* at ¶53. Arguably, if a radiation monitor consists of both the sensor and the read-out instrumentation, the "control-room" answers would be partially correct. If correct, the indication of cooperation has less force. Also it may be that the candidates were thinking only of the read-out mechanism in providing the response. On the other hand "control room" alone could not be the entire correct answer. The fact that both of them, and apparently no other candidates, listed only the "control room" for the location of the radiation monitors does suggest cooperation, but standing alone the answers are not conclusive evidence of cheating.

2110. Judge Milhollin found that other nearly identical responses, while not conclusive, strongly suggest cooperation. These are the responses relating to "forced balance Rosemont" (Report at ¶¶40-43) and the listing of the radiation monitors and associated valves (*id.* at ¶¶55-57). We agree with his assessment that these responses suggest cooperation.

2111. Yet another set of nearly identical responses, those relating to natural circulation (*id.* at ¶¶29-32), while not found by Judge Milhollin to be conclusive of cheating, leaves him uncertain. Standing alone these similarities suggest cooperation. But Licensee points out in its Reply to Findings (¶70) that S and Y, whose integrity have not been questioned, also gave answers virtually identical to those given by G and H on the natural circulation question. Judge Milhollin did not discuss these additional similarities. These similarities lead us to the conclusion that the nearly identical responses by G, H, S, and Y can all be better explained by memorization of common training materials.

2112. Judge Milhollin continued his analysis by noting that, in many tests with many participants, G and H were alone in the number of parallelisms and that their responses were exceptions to the pattern of varied answers on the tests. He also

noted that the sheer number of similar answers is striking and he listed some similarities which were not specifically analyzed, for example, the similarities noted when comparing Licensee Exhibits 66C and 66D. Report at ¶74.

2113. Judge Milhollin did not lightly arrive at the conclusion that G and H cooperated on the weekly exams. He pondered the suggestion that they had each memorized the same answers to all of the respective questions (*id.* at ¶75), or that they could have independently copied their answers from lesson materials (*id.* at ¶76), and, after a thoughtful analysis, he is unable to accept such explanations.

2114. Judge Milhollin and the Board noted a common thread running through the proffered explanations for the many similarities in G's and H's answers. They state that they studied together frequently and they memorized the same study or training materials. Not only could these materials not be produced when there was a very strong incentive to produce them, but frequently they cannot even be identified. So, we have on one hand memories that are said to permit very precise and detailed recall of commonly studied materials, but those same memories could not recall the identity of these materials. In their cumulative totality, these explanations are incredible.

2115. Licensee's consultants, Mr. Trunk, and Mr. John Wilson, an attorney retained by Licensee to investigate the similarities identified by Mr. Trunk, initially believed from the objective evidence that the parallelisms in G's and H's responses may well have been the result of cooperation. Licensee reply findings ¶¶48-50. During Mr. John Wilson's investigation, G and H convinced him that they were truthful in their denials. We have considered Mr. Wilson's reasons and find them unpersuasive for the reasons set out above. We discuss Mr. Wilson's role in greater detail in ¶2250 below. We have depended instead upon our own direct examination of the suspected responses, and G's and H's explanations of them. Judge Milhollin correctly remained unconvinced. We adopt his conclusion that some sets of responses independently established cooperation, others strongly suggested cooperation and that the pattern established by all of them also establishes cooperation. There is, however, one possible explanation for the similarities not addressed by Judge Milhollin. Perhaps either G or H copied from the other in every instance without the other knowing it. The extent and the details of the similarities render this explanation too improbable to accept.

Conclusions: G and H

2116. Judge Milhollin concludes that the Licensee should be prohibited from using G and H to operate TMI-1. Report at ¶311. This view is shared by the Commonwealth of Pennsylvania. The intervenors believe that the Licensee is simply not qualified to operate the plant, in part, because of G and H. As we have discussed below, G and H were not parties to this proceeding and they have not been provided a hearing on their licensed status. We have no authority to penalize

them without due notice and a full hearing. Judge Milhollin's sanction would be the equivalent to a license revocation, and it would appear to be for life. Even if we had the authority, such severe punishment would be inappropriate. It is true, as Licensee states, that we can recommend to the Commission that a separate action be brought against the licenses of G and H. Licensee would, in that event, remove them from licensed duties until the matter is resolved. Licensee Comments ¶26. Such a proceeding might add yet one more disruption and distraction to the important safety business of preparing the unit for eventual restart, if such be permitted. There is a public interest in concluding this proceeding and its related aspects. All parties are entitled to a final conclusion without unnecessary further delay.

2117. We have also given consideration to requiring the Licensee to design and impose its own administrative remedy to assure that G and H (and others in the operating staff) understand by appropriate discipline that G's and H's cheating in particular is intolerable and unrewarding. But given the fact that the Licensee continues to maintain that G and H did not cheat, we have no confidence that Licensee can proceed in an acceptable manner.

2118. We have however fashioned a remedy which is within our jurisdiction which we propose after considering several mitigating factors. As we discuss below, we hold the Licensee accountable for permitting an undisciplined training and examination environment. While G and H cheated on their own volition, we believe that there should have been a clear and emphatically enforced policy of requiring absolute honesty on every examination. Also, we recognize that the examinations were administered by the company, not the NRC. They were semi-official in that they were required by the Commission's hearing order and regulations, but we cannot discern that the official importance of the examinations was ever effectively impressed upon the operators.

2119. The Board has examined the answers to the quizzes involved in the G and H incidents. The proportion of answers produced by cheating is relatively small. We do not believe that the overall results demonstrate a poor understanding of the course material. We have, then, a question of ethics, not of competence. G and H have passed their NRC examinations under properly monitored conditions.

2120. The Board therefore proposes that G and H voluntarily accept a two-week suspension without pay in lieu of an action against their licenses. The suspension may be at any time G, H and the Licensee deem best. Two weeks is not the result of an exact mathematical calculation; it is the product of our collegial judgment. It is a remedy which is within our jurisdiction and is appropriate because it is fair, final, simple, and responsive to the G and H cheating episodes. In terms of the very large numbers often associated with nuclear power plants, two weeks' pay for a reactor operator does not seem to be very important. But, as to G and H, and, we regret, their families, the effect will be felt and remembered. Moreover, this action will have an adverse effect on their careers. A portion of the monetary

penalty imposed by the Board upon the Licensee is directly attributable to their actions.

2121. Accordingly, the Board recommends to the Commission that, in accordance with 10 CFR Part 2, Subpart B, and 10 CFR 55.40, a proceeding be initiated to consider the modification or suspension of the operators' licenses of G and H.²³⁰ If, during the Commission's immediate effectiveness review, the Licensee reports to the Commission that G, H, and the Licensee accept the Board's proposal, this recommendation should be considered void.

S and Y
(Report at ¶¶78-81)

2122. Judge Milhollin correctly concludes that very similar answers on quizzes by operators S and Y are attributable to virtually verbatim similarities to training materials, not to cheating.

GG, W and MM
(Report at ¶¶82-93)

2123. GG is a control room shift foreman, W was a shift supervisor who, as we noted above, resigned after cheating. MM is a shift technical advisor.

2124. On a December 1980 quiz, Lessons Learned Question 1 asked: "List two (2) major areas of weakness noted by the Lessons Learned Task Force." On the same quiz, Lessons Learned Question 2 asked: "The most important lesson learned fell into the general area of operational safety. What was the primary deficiency in this area?"

First Question

2125. MM, W, and GG answered:

MM: Non safety related systems affecting safety systems
operator action compounding the challenge (sic)
to safety systems.

Licensee Ex. 66K.

²³⁰ Section 55.40 also provides for license revocation. We have intentionally not included revocation in our recommendation. We recognize, however, that both the initiation and the results of any such action are beyond our jurisdiction.

W: Non Safety related systems affecting Safety related systems (Challenges (sic) the system) and operator action which compounded the challenges (sic) to the safety system.

Licensee Ex. 66L.

GG: Non safety related systems affecting safety related systems (challenges (sic) the system)
- and -
Operator actions which compounded the challenges (sic) to the safety system.

Licensee Ex. 66M.

Second Question

2126. MM, W, and GG answered:

MM: Operator training inadequate.

Licensee Ex. 66K.

W: Operator training allowing actions which challenged (sic) the automatic actions of the safety related systems.

Licensee Ex. 66L.

GG: Operator training allowing actions which challenged (sic) the automatic actions of the safety related systems.

Licensee Ex. 66M.

2127. Judge Milhollin notes that all three answered “Lessons Learned” Question 1 with the same unnaturally stilted and abstract language and with the same misspelling of the word “challenge”. Report at ¶¶82, 83, 89. In addition, as can be seen, W and GG employed the same misspelling and identical language in their responses to Lessons Learned Question 2 on the same quiz. *Id.* at ¶¶83, 90.

MM

2128. Judge Milhollin concludes that MM either must have “cooperated” or that he had copied the same training material with respect to the first question. *Id.* at ¶¶91, 92. This latter alternative we view to be a weak exculpation of MM by

Judge Milhollin.²³¹ We agree with Judge Milhollin that MM's answer to the second question does not indicate cheating.

2129. It is not clear from the Report how the possibility of copying the same training material can exculpate MM but not GG and W on the same question. Common training material was never identified during the investigations. The incentive to locate any such material was very great. If it had been used by three of the candidates, it seems that evidence to the effect should have been discovered, or at the least, there should have been a specific identification of such materials.

2130. MM did not testify and was not present during the evidentiary sessions. In response to the Board's invitation to comment extended to all personnel named in the Special Master's Report, MM stated that [as a shift technical advisor] he was not required to take the exam in question, that he did so solely to evaluate his knowledge of the material covered. His answer was not graded. He also comments that the language of his answer which appears to Judge Milhollin (and to the Board) to be unnaturally stilted should be viewed in the context of the question, which requires a "list" of two concepts. Now that he has pointed it out, we can see that MM's answer format as it is spaced, is not so stilted and unnatural when viewed as a list. MM also suggests that the fact that his answer varies from the instructor's answer key should not be taken as an indication of cheating if the answer is nevertheless correct. We agree.

2131. He also argues that the instructor must have used information from NUREG-0578 and NUREG-0585, then outlined it on the board during class, from which MM recalled the words during the quiz soon after. From this latter explanation we infer that MM is stating that at the time of the quiz he remembered language verbatim from a source that today he cannot recall. This is understandable; yet the marked parallelisms among the answers by MM, GG and W on the first question still leave us troubled with respect to MM.

2132. Nevertheless, considering MM's lack of motive to cheat, his explanation about the "list" format and spacing of his answer, his arguable, if not strongly convincing explanation for the source of the answer, and the fact that this is a single, short episode, we do not find that MM cheated on the December 1980 quiz.²³² This is not the total exoneration to which MM might have been entitled

²³¹ Exoneration of MM is a view which is apparently shared by the intervening parties in that the Commonwealth accepts the Licensee's expert testimony to that effect (Commonwealth proposed findings at ¶44) and TMIA discusses the identical answers by GG and W but does not urge a finding with respect to MM (TMIA proposed findings at ¶¶106-14). The Aamodts were silent on MM in their proposed finding before the Special Master, but in their Comments (at 16) without explanation they include MM in their proposed list of cheating personnel.

²³² This finding is made partly upon MM's argument concerning the significance of evidence of record, partly upon MM's factual statements not in evidence and partly upon our own analysis. We see no prejudice to any party in this approach. Contrary to the intervenors' general complaints, their right to due process is not compromised in that none of them had urged a finding of impropriety against MM before the Special Master. Our only alternative was to reopen the record to take evidence from MM

(Continued)

after a full hearing with his participation. The evidence simply isn't there to overcome all the implications of the very similar answers. It would be exceedingly unfair to MM, and possibly a factual mistake, if his status or reputation were to be affected by our uncertain conclusion.

GG and W

2133. The answers by GG and W on the first question were longer with more identical points. The spacing does not suggest a listing of ideas. Moreover, their answers to the second question were also identical and contained the same misspelling. It may be that one of them imperfectly memorized parts of the answers from the same source used by MM if his account is to be believed, but we are not persuaded one way or another that there was a common source during training. The evidence is convincing that even if there were an unrecalled common training source from which either GG or W memorized answers, the many identical points in their answers establish cooperation. We adopt Judge Milhollin's conclusion to that effect.

2134. An inference, albeit weak, to be drawn from these responses and the testimony is that W, a known cheater, copied from GG. However, in view of the extent of the similarities, we also conclude that GG permitted W to copy or at least knew that he copied. This conclusion troubles us, and presents a difficult choice. We cannot, of course, be perceived to, nor do we condone cooperation by GG. The matter is important. For example, as shift foreman, GG might briefly serve as the Emergency Director if, at the outset of an emergency, the shift supervisor is elsewhere in the plant.

2135. On the other hand to disqualify him from licensed duties is a very severe sanction — one that is not warranted when all of the circumstances are considered. Our finding raises a question of GG's ethics, not his competence. As to his ethics, his conduct in permitting W to copy must be viewed in light of the fact that (1) W was his supervisor, (2) this was a company-administered examination, (3) there was inappropriate informality and inadequate proctoring during the examinations, and (4) there was a broad attitude of disrespect for the examination process. From these circumstances we conclude that GG was placed in a very difficult situation by his employer. It is very understandable why he would not prevent W from copying. We would not make the same finding on an NRC licensing examination.

2136. We have reviewed the transcript of GG's testimony and do not fully share Judge Milhollin's opinion that GG's credibility is undermined. Report at ¶93; see Tr. 25,683-720. While we might wish that GG had directly acknowledged W's

because he had no other opportunity to confront the evidence against him. Such a course seems unlikely to improve the record or to materially affect our decision. Considering the time and resources required to reopen an evidentiary record, and with no apparent possibility of a different result, reopening is not warranted.

copying, considering his acknowledgment that W “might” have copied, we will not find him ethically disqualified for lack of candor. He was in a very difficult situation during the examination, as we noted, and again during the hearing.

2137. One point remains unresolved. Although we did not find that MM cooperated, neither did we find that his explanation was convincing. Assuming *arguendo* that there was cooperation involving MM, GG, and W, and having found that W copied, is there any assurance that GG did not copy from MM? It is more likely that GG would have been the original author of the nearly identical answers common to GG and MM, because MM’s answer is the shortest and the similarities in GG’s and W’s answers continue beyond MM’s shorter answer into the second question. We recognize that this analysis is tenuous, but it is the best we can make from the record before us.

Conclusion: MM and GG

2138. We impose no sanction on MM or GG.

Mr. Shipman at the Coffee Machine
(Report at ¶¶94-100)

2139. Mr. Henry Shipman, the plant operating engineer, is a principal assistant to the TMI-1 manager of operations, Michael Ross, who in turn is the senior operating official. According to his statement and testimony, Mr. Shipman took a company-administered mock exam and both the NRC RO and SRO examinations in April 1981. During one of the exams — his memory is uncertain as to which — he took a break near the coffee machine in the hallway. He was approached by a presumed license candidate who asked him the answer to an exam question, or possibly a question only related to an exam question. Mr. Shipman spontaneously provided the brief answer but shortly afterward began to worry that this assistance was improper. He did nothing about it, however, until after the reopened hearing on cheating began, then he voluntarily reported the incident, but not the identity of the questioner, to Mr. Hukill, TMI-1 Vice President.

2140. He then became the object of intense inquiry, first by Mr. Hukill, then by the NRC investigators, followed by further inquiry by GPU Nuclear President Robert Arnold. Finally he appeared at Judge Milhollin’s hearing where he again underwent intense examination, and, incidentally, waived his right to confidentiality.

2141. While he freely admits his poor judgment in supplying the answer, he has steadfastly maintained that he does not remember who asked the question. He convinced Mr. Hukill that he can’t remember and he later convinced Mr. Arnold, who placed a letter of reprimand in his file for supplying the answer. Mr. Shipman

could not convince the NRC investigators or Judge Milhollin that he cannot remember. The Commonwealth of Pennsylvania urges a finding that there is no hard evidence that Mr. Shipman is lying, as does the Licensee.

2142. Mr. Shipman's voluntary report and his testimony is the only evidence that he acted improperly. Without it there is no *corpus delicti*. Nor is there any evidence that he does remember who approached him except for the implication that he should remember. Can we "convict" him on his own uncorroborated admission but fail to accept his word about the identity of the other person? Perhaps. His admission that he supplied the answer is against his interest and therefore very believable. His statement that he does not remember the questioner is not as believable, but not totally incredible. His denials could be said to be also against his interests because he must know that his denials are doubted and are causing him trouble. On the other hand, his denials are consistent with a natural reluctance to inform. Also, having first denied to Mr. Hukill that he remembers who asked about the question, he could not later admit such knowledge without admitting to having lied initially. Perhaps his initial denial was spontaneous; it is a natural reaction. Thereafter, he would feel trapped into that position.

2143. We share Judge Milhollin's reluctance to accept Mr. Shipman's testimony concerning his memory of the events but for somewhat different reasons. Mr. Shipman first declined to accept and to sign the NRC investigators' version of their interview with him, because, in the interest of accuracy, he preferred to write out his own version later. Staff Ex. 28, at 5, and at Enclosure 3. In his written statement he was definite that the question was asked during the NRC examination and that the question asked was one he presumed to be on that exam. Staff Ex. 28, Enclosure 3. Licensee, however, points to Mr. Shipman's hearing testimony that he was uncertain about which exam and whether the question was on the exam. Licensee Comments at ¶36. The significance of any weakness in Mr. Shipman's memory, as possibly reflected in his testimony, is that it makes his asserted inability to remember the questioner more plausible. It is, of course, possible that on later reflection Mr. Shipman lost confidence in the accuracy of his earlier written statement and tempered his testimony accordingly. The record is very confusing as to exactly what he does and does not remember, except that he consistently states that he remembers nothing whatever about the questioner.

2144. The Board has evaluated the record and the Report from all these angles. Although we do not adopt all of Judge Milhollin's analyses of this factual issue, his conclusion that Mr. Shipman is not truthful in his denial is probably the best inference to be drawn. But this inference is not so convincing that we are willing to recommend Mr. Shipman's removal or suspension on that basis. The severity of any sanction should also reflect the fact that Mr. Shipman volunteered the very information now bringing about the sanction. There is a public interest in encouraging such disclosures. If he were to be severely penalized for not disclosing enough, any disclosure whatever would be discouraged.

2145. Judge Milhollin concludes and recommends that Licensee should not be permitted to use Mr. Shipman in operating TMI-1 until he names the unidentified questioner or until he gives a credible reason why he cannot name him. Report at ¶314. Neither will ever happen. Intervenor TMIA, for example, would, without further ado, simply remove Mr. Shipman's license permanently. TMIA Comments at 10. The difficulty with either sanction is that it assumes that the evidence beyond doubt is conclusive that Mr. Shipman does remember his questioner, a conclusion which we have found is not free from doubt. The letter of reprimand and our own stated suspicions about his candor are appropriate sanctions.

2146. The Commonwealth points out that a more important concern is that there is an uncaught cheater who is more culpable than Mr. Shipman in that Mr. Shipman acted without premeditation and admitted his participation. Of even greater importance is the fact that the unknown cheater felt free to approach a member of middle management for assistance in cheating on what may have been an official NRC licensing examination. The major remaining significance of this episode is whether the Licensee and the NRC Staff adequately investigated this incident which is also the subject of Judge Milhollin's report as we discuss below.

Conclusion: Mr. Shipman

2147. We impose no additional sanction upon Mr. Shipman.

P and Mr. Husted in the Unproctored Room (Report at ¶¶101-111)

2148. P is a TMI-1 shift supervisor and Mr. Husted is a licensed operator instructor. They took the April 1981 NRC examinations together in a frequently unproctored room with no other candidates present. During an interview by NRC investigators Messrs. Ward and Baci, P expressed anger about the fact that the NRC examiner, by not proctoring, made him "vulnerable to any allegation of cheating" in that it "removed a potential witness to his [P's] honesty" and that it put P in a position where he could be solicited. Mr. Ward became suspicious because of P's anger (or perhaps by the force of his anger) and tricked P by pretending untruthfully that he, Ward, knew that Mr. Husted had solicited P. Whereupon, according to Ward, P was startled and admitted that Mr. Husted had one time in fact solicited P for an answer but that P did not provide the answer.

2149. At the hearing P denied any such admission. P gave another account of the interview in which he offered the explanation that confusion between questions from both Messrs. Ward and Baci must be the explanation for Mr. Ward's belief. But in testimony which convinced Judge Milhollin, Mr. Ward stated that P had unmistakably admitted that Mr. Husted had solicited the answer. Judge Milhollin

concludes that Mr. Husted did solicit the answer and that P has denied it untruthfully. The Board, however, finds that there is insufficient evidence to support these conclusions.

2150. Judge Milhollin's analysis and conclusions depend heavily upon witness demeanor. As we noted at the outset, while we give due consideration to Judge Milhollin's observations of witness demeanor, we believe that it is our particular duty as the primary triers of the fact to examine carefully whether the objective indicia of witness credibility is consistent with inferences drawn from demeanor.

2151. We begin our analysis of this episode by observing that we draw no inferences whatever unfavorable to P or to Mr. Husted because P was angered by the lack of NRC proctoring during the exam. We would call it justified indignation. This is not to say that Mr. Ward should not have used P's anger as a clue suggesting further inquiry. But investigators' leads and permissible adjudicative inferences are vastly dissimilar. We wonder, however, whether Mr. Ward's view that P was inappropriately angered may not have colored Mr. Ward's interpretation of the disputed meaning of P's remarks during the OIE interview.

2152. Despite the fact that Mr. Ward admits that he misled P during the OIE interview (a time-honored investigative technique), we accept Judge Milhollin's judgment that Mr. Ward is a truthful and sincere witness. He has no reason not to be, nor is there any evidence to the contrary.

2153. Judge Milhollin stated at ¶111, "[M]r. Baci, who also testified, was present when the admission occurred" but he did not explain the significance of this observation. Mr. Baci, on the witness stand with Mr. Ward, remained silent when Mr. Ward testified on this point. When a member of a panel of witnesses remains silent during oral examination it is sometimes understood by prior stipulation that the silent witness agrees or does not disagree with the speaking witness. We are aware of no such understanding in this instance, and we assign no evidentiary weight to Mr. Baci's silence.

2154. Moreover neither Mr. Ward nor Mr. Baci has notes taken contemporaneously with or soon after the disputed interview and the "admission" by P, for reasons irrelevant to the specific issue, was never included in the investigators' official report. Thus there is no independent corroboration of Mr. Ward's testimony, which depends entirely upon his memory and his interpretation of the events.

2155. We also note the undisputed fact that P was questioned by both investigators during the same interview. This gives some credence to P's opinion that Mr. Ward did not understand that P's response was to Mr. Baci on a different question, not to Ward. While P's explanation does not seem very logical to us, it demonstrates the potential for confusion where two investigators interrogate at once. In any event, it is not necessary for P to explain how Ward came to Ward's conclusions.

2156. Finally we are particularly struck by Mr. Ward's recollection of the nature of the question Mr. Husted is said to have put to P. Mr. Ward testified that P said the question was ". . . more like what a certain concept was, well, what in hell does this mean or words to that effect." Tr. 25,463. If this is so, one inference is that Mr. Husted was asking for clarification of a question when, it must be recalled, there was no NRC examiner present to clarify it for him. While this would not be a good thing for Mr. Husted to do, it is not the same as seeking the answer. Another equally reasonable explanation of Husted's remark, if in fact it was made, is that ". . . what in hell does this mean . . .?" was nothing more than rhetorical grumbling. Accordingly, as to P we find that Mr. Ward's accusations are not sufficiently supported by reliable evidence.

2157. As to Mr. Husted, Mr. Ward's testimony lacks any probative value whatever. Even according to Mr. Ward's disputed account of the interview, P could not remember very well what Husted had asked him, and Ward himself could not remember very well what P had told him. Tr. 25,463-64. Moreover, as we noted above, whatever it was that Mr. Ward remembered about whatever it was that P remembered about Mr. Husted's question, it is as susceptible to a benign inference as it is to one of cheating. Added to all of this uncertainty is the fact that because of the sequestration order, Mr. Husted himself was not present to hear and to confront Mr. Ward's hearsay testimony.²³³ Thus we leave the subject of Mr. Ward's accusations with the slate wiped clean for P and Mr. Husted.

2158. Having found that the charges leveled against P and Mr. Husted by Mr. Ward are unsupported, there should be no need to assess the credibility of either in denying those charges. But Judge Milhollin points to other areas of asserted misconduct by each of them as support for his conclusions that P and Mr. Husted untruthfully denied Ward's charges. Therefore a subissue arises as to whether either should be found to be ethically unqualified to perform licensed duties.

2159. P is found to be untruthful by Judge Milhollin because he testified that he had not seen operators cooperate on weekly quizzes, when in fact OO testified that OO, P and Q discussed a math problem on a weekly quiz. OO was quite clear on this point. Tr. 25,975-76; 25,995-96. Judge Milhollin found OO's testimony to be credible, observing that OO incriminated himself by the testimony. Report at ¶106. However in view of OO's disinclination to call "cooperation" on weekly quizzes "cheating" (Tr. 25,968-74), and in view of testimony by OO and others concerning the uncertain rules pertaining to the weekly quizzes and their informality, we cannot find that P's conduct, based upon the single allegation by OO should disqualify him from licensed duties.

2160. As to whether, as found by Judge Milhollin, P untruthfully denied observing cooperation on the weekly quizzes, we find that he did not. Report at

²³³ However, Mr. Husted was informed of Mr. Ward's testimony (Tr. 26,910; 26,948) and was permitted to address the basic allegation.

¶106. It is possible that P did not recall the single event referred to by OO and cited in the Report as evidence of P's untruthfulness or that P did not regard the episode as cheating. In fact P was never asked about the incident with OO. P was asked, in the testimony relied upon by Judge Milhollin, a general question of whether he had ever seen candidates cooperate on weekly quizzes. He replied that he had seen them ask clarifying questions about the questions but not about the answers and then only when proctors were not available for that purpose. Tr. 26,701-02. This is consistent with OO's testimony. Tr. 26,995-96. There is no evidence that P lied about the incident with OO, P and Q.

2161. Judge Milhollin also found that P was not believable in his testimony as to whether he became angry during the examination or whether it was during the OIE interview. Report at ¶¶107-08. To arrive at the conclusion that P is untruthful in this regard requires, in our view, too fine an analysis of too few facts. Moreover we cannot discern from the stated context of this subissue that P had a motive to be untruthful.

Conclusion: P

2162. The Board reaches no conclusion unfavorable to P.

Mr. Husted's Refusal to Cooperate with NRC
(Report at ¶¶109-10)

2163. Judge Milhollin found that Mr. Husted refused to cooperate with NRC investigators during an interview on July 29, 1981. He also found that Mr. Husted, as conceded by Licensee, testified about the matter in a less-than-serious and in a flippant manner. Report at ¶109.

2164. In a subsequent interview by NRC investigators, Mr. Husted provided a small amount of information concerning rumors about passing papers during an examination. He claimed that he remembered the information after the first interview. Judge Milhollin concludes that Mr. Husted is not a credible witness. This is a finding based in part upon Judge Milhollin's observations of Mr. Husted's demeanor.

2165. The Board has carefully read Mr. Husted's testimony in which he attempted to explain his first refusal to answer the questions of the NRC examiners and his claim that he later remembered some information. Tr. 26,910-37. His testimony is incredible and the transcript of it is consistent with Judge Milhollin's findings as to his demeanor. We note in particular that his explanation that, because he didn't *have* any information to provide, he first told the NRC investigators that he did not *want* to answer their question is simply not believable. Tr. 26,928-29. See Report at ¶110. To his credit, however, he did candidly admit that

he had first refused to answer because in part he “. . . did not like the way the investigation was conducted.” Tr. 26,929. We conclude that Mr. Husted refused to cooperate with the NRC investigators. Moreover, later when he provided some information, he continued to withhold information within his knowledge; and he provided an incredibly inconsistent account of his reasons during the hearing.²³⁴

2166. The situation with Mr. Husted presents much the same dilemma as that involving Mr. Shipman, except that we perceived a sense of seriousness and regret in Mr. Shipman’s testimony. We found above that there is no reliable evidence that Mr. Husted himself cheated. He could have denied from the outset that he had any information whatever about cheating, and he probably would have escaped censure. But he came forward voluntarily with some information. By first refusing to answer fully the NRC examiners’ question he raised suspicions where perhaps none would have arisen otherwise. His testimony on the matter was not only unbelievable, but it gave the sense that he didn’t care whether he was believed or not.

2167. These factors are not exactly quantifiable but they add up to a conclusion that, if Mr. Husted is representative of the TMI-1 training department, his attitude may be a partial explanation of why there was disrespect for the training program and the examinations. We would have expected Mr. Husted to shoulder at least part of the responsibility for the need perceived by O, W, G and H to cheat. We would expect him to be gravely concerned about the damage to his co-workers, his employer and the public’s confidence in the operation of the unit caused by the cheating episodes and failure of his own training department to create a serious and organized environment during the training and quizzes. As a licensed operator instructor Mr. Husted may have the ability to impart accurate technical knowledge to his charges — the record is silent on this. But, from our evaluation of his contribution to the investigation and the reopened hearing, we question whether he is able, or if able, willing, to impart a sense of seriousness and responsibility to the TMI-1 operators.

Conclusion: Mr. Husted

2168. Our dissatisfaction with Mr. Husted’s conduct during the investigation and his testimony is not related to his status as a licensed reactor operator. An action against his license would be inappropriate in that it would not be responsive to the problem, which we have found to be one of attitude. We have no evidence that the attitude we criticize is manifested in his performance as a teacher but, as

²³⁴ The Commonwealth of Pennsylvania submitted proposed findings on this subissue which we consider to be an excellent factual analysis of Mr. Husted’s statements and testimony. Commonwealth Proposed Findings ¶¶15-23.

noted above, we fear that such is the case. But there is also the widely held view in the field of education that the attitude of a teacher is irrelevant to his or her competence. Mr. Husted does not have to love and respect the NRC to do his duties. Yet our doubts persist about his competence to instill a sense of seriousness about the important need for integrity, discipline and public confidence in the TMI training program. Below, ¶2347, *infra*, we require changes to be made in the Licensee's training program including the establishment of criteria for qualifications of training instructors, and the auditing of training at the point of delivery. We recommend that the qualifications and delivery performance of Mr. Husted receive particular attention during the forthcoming review of the TMI training program. We impose no direct sanction on Mr. Husted.

U in Mr. Husted's Office
(Report at ¶¶112-22)

The Telephone Call [by U] to KK
(Report at ¶¶123-29)

Rumors about U
(Report at ¶¶130-32)

2169. U is a control room shift foreman. Either he has an unlucky affinity for situations having an aura of cheating, or he was involved in cheating episodes. By an exhaustive analysis of several factual situations, Judge Milhollin concluded that U probably made himself available near the examination rooms during the April 1981 NRC examinations to assist candidates, and that he in fact offered by implication to assist at least one of the candidates. However, troubled by substantial doubts, Judge Milhollin recommends no action. It is clear to us that Judge Milhollin wrestled long and hard with the evidence before arriving at his conclusions. The Board itself has difficulty, because, standing alone, some of the incidents relied upon by Judge Milhollin would not be sufficient to convince us, but together they suggest aid in cheating.

2170. By way of background, in April 1981 the RO and the SRO examinations were each administered twice over four days. The "A" RO and SRO set was followed by the "B" set. U had taken the "A" set on April 21 and 22. The first incident involving U was his appearance in one of the examination rooms on April 23 in the morning before the "B" set began. He had conversations with the "B" set candidates to whom information on the "A" set questions would be helpful. U admits that he "may have" told the candidates what categories of subject matter were covered in the "A" set. Tr. 26,879. The record does not disclose whether candidates were instructed not to discuss the examination material. There should be, but there is not, some form of sequestration in these situations. As to U,

whether or not he was instructed not to discuss the examination questions, he should have known that it was implicitly not permitted. His judgment in so doing was very poor.

2171. Four operators, some credible, some not very credible, testified that they heard rumors following the April 1981 examinations that someone had been available near the examination rooms to help the candidates. Two witnesses identified U as the subject of the rumors. One credible witness, OO, heard the rumor *before* the examination. KK reported the rumor to be that the person was there to help the candidates with the knowledge of someone higher up in the company. Staff Ex. 27, at 30.

2172. Rumors, of course, are notoriously unreliable and “. . . are the worst type of hearsay.”²³⁵ They can be malicious and inaccurate in their genesis and in their repetition. They can derive from a single source but spread to seem like common knowledge, and they cannot be tested by confrontation.

2173. Nevertheless, we believe that Judge Milhollin prudently evaluated the rumors. Even those witnesses whose credibility is doubted, O and W, are credible in their testimony recounting the rumors. The rumors do not further the interest of any participant, thus they are more believable than a rumor which would advance the interest of the originators or the communicators. Mr. OO's version of the rumor was reliably predictive in that he heard in advance that the assistance would come from someone placed in Mr. Husted's office. And indeed, as Judge Milhollin discusses at length, Mr. U remained in the vicinity of that office during the two-day “B” exams. Finally, it is possible that the witnesses who recounted the “rumors” were in fact testifying about more direct experiences than they admitted. There has been a very strong reluctance on the part of those involved to testify against their co-workers. By recounting “rumors” they are spared this unpleasantness while at the same time assuaging any feeling of guilt about not being forthright. We concede however, that much of the foregoing analysis is speculation. We approach the “rumor” testimony with caution and give it independent weight only as it relates to Licensee's response to the rumors. We give the rumor testimony no weight whatever insofar as it would tend to incriminate U.

2174. Consistent with the rumors, U in fact was headquartered in Mr. Husted's office in the vicinity of the examination room during the “B” examinations by prior arrangement with Mr. Husted who was then taking the exams. U testified that his sole purpose there was to study, but Judge Milhollin doesn't believe him. Judge Milhollin's discussion is reasonable. Report at ¶¶115, 119-20. The Board, however, remains uncertain.

2175. Much is made of the fact that U claimed to have used Mr. Husted's office to study for the next exam on the very day following a grueling two-day session

²³⁵ *United States v. Mandel*, 591 F.2d 1347, 1369 (4th Cir. 1979); *cert. denied*, 100 S. Ct. 1647, 445 U.S. 961; 64 L. Ed. 236 (1980).

taking the NRC licensing examinations. The next exam was scheduled for some time in the relatively distant future — four or six months later. As unlikely as such diligence might seem, the evidence was unrefuted that U and others were assigned by management to study on those two days. Judge Milhollin recognizes that U was assigned to study (at ¶115), but does not discuss why, in view of that fact, it was improbable that U actually intended to study. The record does not disclose what else U could have done to justify his wages on the days in question. Moreover, although it was the only time before or after the episode that U had used Mr. Husted's office to study, it was also a rare occasion that Mr. Husted's office was available for that purpose. He was absent taking the examinations.

2176. To the Board, the evidence on the use of Mr. Husted's office during the "B" exams falls roughly equal on both sides of the subissue. It was a good place to study and a good place from which assistance on the exam could be given. There were other places to study. U spent a lot of time not studying during the relevant period, but his assignment was to study. We can't decide this subissue.

2177. Mr. OO testified that U approached him outside the examination room with an unspoken but implicit offer to help. This testimony is found by Judge Milhollin to be credible, based in part upon his observations of OO's demeanor. *Id.* at ¶¶118, 121. This may be a reasonable conclusion for Judge Milhollin to reach. For the Board, however, OO's subjective interpretation of U's unstated purpose in approaching OO is too far removed from our ken to be the basis for a reliable conclusion.

2178. U himself testified that he may have unknowingly provided someone with a short answer during the examination, that providing a short answer would not in his view be cheating, and that it is "not unlikely" that an exam-taker could have received an answer while U and others were in the hallway outside the examination room. Report at ¶117, *citing* Tr. 26,837-38; Tr. 26,862-63; Tr. 26,874-75.

The Telephone Call [by U] to KK (Report at ¶¶123-29)

2179. The evidence is persuasive that a person identifying himself as "U" called KK, a shift technical advisor, on April 23, during the "B" examinations, and asked KK the answer to an easy question which was *not* on the "B" examination. KK, knowing that the "B" examination was in progress, but not knowing that the question was not on the exam, queried "U" if he was taking the exam. Whereupon "U" replied that he was not, but that he was helping O who was taking his exam. KK then told "U" that he would not, therefore, answer the question until after the examination. KK did not identify "U's" voice, but his memory of the question and the conversation is definite and is reliably corroborated. *See* Report at ¶123.

2180. U's testimony on this episode was rather like his other testimony which Judge Milhollin referred to as "non-denial". *E.g., id.* at ¶122. He admits that he could have called KK and that he may have stated that the call was about a test question but it would have been on another and unrelated test. Tr. 26,483-84; Staff Ex. 27, at 37-38; Report at ¶124. But U asserts that he did not call for the answer to the question remembered by KK nor to help anyone in that no such help was required because the answer was easy.

2181. Judge Milhollin's analysis and the supporting evidence convinces the Board that the person claiming to be "U" who called KK was in fact U, that the easy question asked was not on the exam in progress, that U did state that he was asking in order to help O take the exam in progress, and that U accepted, without counter explanation, KK's explanation that he could not provide the answer because of KK's stated assumption that the question was on the exam. *See* Report at ¶¶124-29; Staff Ex. 27, Enclosure 8, at 3-7.

2182. Judge Milhollin's understanding becomes uncertain at this point accurately calling the entire affair a mystery. *Id.* at ¶129. He speculates that U could have been "testing" KK before asking the "real" question. *Id.* We agree that the purpose of U's phone call is unclear. U is the only person, with the possible exception of O, who can provide the solution to this mystery. Although afforded the opportunity, U has not disclosed his purpose. Therefore Judge Milhollin's inference that U was testing KK before the "real" question is not unfair.

2183. Judge Milhollin concludes that the evidence is not sufficient to establish that U was recruited to offer assistance to the test-takers by management or by fellow employees. *Id.* at ¶122. Our own review of the evidence fails to discover any evidence that U was encouraged by others to perform this role.

2184. Intervenor TMIA recognizes this state of the evidence but comments (at 5) that the evidence does not appear to preclude the possibility that Mr. U on his own may have stationed himself to render assistance to the exam candidates. This is an inviting conjecture with some evidentiary support. U seemed to be ubiquitous around the examination room during the "B" test. His own testimony reveals that he may have aided the "B" candidates with "A" examination information, that he may have "unknowingly" provided a "B" candidate with a short answer in the hallway, and that during the "B" exam he may have called KK about a question, albeit on another test. Here again we are faced with a dilemma where the principal hard evidence against a suspected malfeasant is his own testimony. Thus again we are concerned and hesitant about selecting testimony which inculpates the witness while rejecting the testimony that exculpates him. U has consistently denied knowingly aiding the exam candidates. We recognize that U, and perhaps other witnesses, may have vaguely admitted facts consistent with suspicions of improper conduct as a precaution against a perjury charge if later that conduct is proved. But absent some reliable external evidence of U's misconduct it would be unfair to infer that his admissions were precautionary.

2185. This is yet another aspect of the suspicion and confusion that swirls about U. Judge Milhollin prefers to give U the benefit of the doubt and recommends that no sanction be imposed. Report at ¶1319. On some subissues we have made conclusions more favorable to U and on others less favorable to him than has Judge Milhollin, but, in sum, we come to the same result. We, too, reluctantly give U the benefit of the doubt.

[Other] Rumors about U
(Report at ¶¶130-32)

2186. Judge Milhollin has correctly declined to find that U used notes written on his hand and crib sheets during NRC and company-administered examinations. Rumors to this effect had circulated among the wives of some of the TMI employees.

Conclusion: U

2187. The Board imposes no sanction on U.

The Telephone Call to WW
(Report at ¶¶133-34)

2188. WW is a shift technical advisor who received a phone call during a company-administered exam requesting information which, as he later learned, would have been useful on that exam. He could not identify the caller. Judge Milhollin's analysis of the incident is substantially correct except he concludes with certainty that the call was cheating in that the question asked was in fact on the exam. Since the information requested was only a portion of the needed answer, and the information could have been requested for other reasons, that conclusion, while probably correct, is not inevitable.

2189. We agree with Judge Milhollin that there may be another uncaught cheater in the plant, but unlike the case with Mr. Shipman, the caller to WW may be one of the cheaters already identified in the reopened proceeding. Judge Milhollin does not comment on WW's role in this episode. WW should be admonished for carelessness and censured for not coming forth with the information early in the NRC investigation. On the other hand we recognize that he did volunteer the information. No other sanction is called for.

VV and O in 1979
(Report at ¶135)

2190. It is not clear from Judge Milhollin's brief discussion (at ¶135) of the incident involving VV and O in 1979 that the episode does not have direct relevance to the TMI-1 examination and testing procedures and the TMI-1 operators. The incident involved TMI-2 employees before the period encompassed by the reopened proceeding. It is only relevant to the competency of GPU Nuclear's management as Judge Milhollin discusses in ¶¶220-37 of his report.

B. Management's Involvement in Cheating
(Report at ¶¶136-83)

2191. In this section the Special Master evaluates four issues pertaining to whether Licensee's management was itself involved in cheating. One issue pertains to the definition of management (Report at ¶¶181-83), and another relates to a totally incredible allegation of cheating on a Radiation Work Permit test in April 1979 (*id.* at ¶¶179-80). Of special importance are allegations, which we find to be baseless, that the TMI-1 Manager of Plant Operations successfully schemed to prevent proctoring during the April 1981 NRC examinations, and at the same time, improperly influenced the examination answer keys.

Keeping the Proctor Away from the Examination Room
(Report at ¶¶137-52)

Broadening the Answer Keys
(Report at ¶¶153-78)

2192. Michael J. Ross, Manager of Plant Operations, reviews and schedules all operations and directs the activities of about 110 operating personnel consisting of the shift operating staff, the radwaste group and several operations engineers. We commented in the "management" PID that he may be the most important person of the TMI-1 operating team with respect to public health and safety. He had testified before the Board five times over many days on a wide variety of design, procedures and operator training issues. As we noted in the partial initial decision, we were favorably impressed by his testimony. August 27 PID ¶155, 14 NRC at 416, 439-41. The allegations against him have the most serious implications of the entire inquiry on cheating.

2193. YY, a former employee of TMI-1, accused Mr. Ross of purposely keeping the proctor away from the examination room during the April 1981 NRC licensing examinations. He also accused Mr. Ross of improperly influencing the

answer keys on that exam so that the candidates would be scored more liberally. Judge Milhollin concluded that those charges were substantiated. In addition to YY's testimony Judge Milhollin depended upon his analysis of eleven questions and answers on the examination and his conclusion that Mr. Ross' denials were incredible.

2194. The Licensee was shocked by Judge Milhollin's conclusion and immediately (April 30, 1982) moved the Board to reopen the record so that we could hear directly from Mr. Ross. The motion had merit, but we believed that reopening might not be required because, as it happened, the Board had already evaluated Judge Milhollin's findings on Mr. Ross, examined the evidence on its own, and had arrived at a tentative conclusion opposite to that of Judge Milhollin.²³⁶

2195. After a Board conference with the participating parties, Licensee withdrew without prejudice its motion to reopen and the Board served for party comment a draft of its tentative finding on the Ross issues.²³⁷ As a result of the party comments, our conclusion that Mr. Ross did not act improperly in the episodes involved in Judge Milhollin's report has been reinforced.

2196. By way of background, it is an established practice that NRC operator licensing examiners review the test questions and proposed answer keys with knowledgeable utility officials soon after the examinations are underway so that the validity of the questions and answers to a particular plant may be ascertained. To preserve the integrity of the exam this is not done before the examination, but it must be done soon after it begins, to afford a timely opportunity to modify questions that are plant specific. The company representative reviewing the NRC examination normally would not be a license candidate.

2197. On April 23 and 24, 1981, Mr. Ross and two licensed company training officials, Messrs. Boltz and Brown, were called upon by NRC licensing examiner Bruce Wilson to review with him the questions then being presented in the "B" examinations and the answer keys to both the "A" and "B" sets. Unfortunately an unusual situation prevailed then at TMI in that all licensed officials including Messrs. Ross, Boltz, and Brown were required by Commission order to be re-licensed. Mr. Ross and his two colleagues had just taken the "A" set of examinations during the preceding two days, but were the best qualified to evaluate the answer keys to both the "A" and "B" sets and the questions for the "B" set. They had not, of course, seen the "A" set questions or answer key before they took that exam.

2198. This was not a situation of Mr. Ross' making; he did not seek the opportunity. No one asserts that he should not have rendered any assistance to Mr. Wilson. No accusations have been made directly against Messrs. Boltz and

²³⁶ We had proceeded to a tentative conclusion before receiving party comments because no party had urged the findings made by Judge Milhollin during the reopened proceeding. We had an advance draft of that portion of the Special Master's Report.

²³⁷ Unpublished Memorandum and Order Regarding Licensee's Motion to Reopen, May 5, 1982.

Brown. In this instance however, the procedure meant that the three company officials had an interested voice in the formation of the questions and answer keys and it meant that the examiner, while reviewing the test material with them, was not able to attend to his proctoring responsibilities. Thus a plausible background exists for the allegations made against Mr. Ross by his sole accuser, YY.

2199. YY was formerly employed at TMI-1 as a part of the operating shift during a period which embraced the April 1981 NRC exams. In September 1981 he reported to the NRC inspectors and later testified that Mr. Ross had implied that he, Ross, had deliberately distracted the NRC examiner so that the candidates could cheat, and that Mr. Ross had convinced the NRC examiner to expand improperly the answer keys so that scoring would be unfairly liberal. YY also stated that Mr. Ross is the type of person who would purposely do such a thing. Without YY's testimony there would be no direct evidence against Mr. Ross, but Judge Milhollin's analysis includes his findings relative to other circumstances surrounding the episodes. He concludes that Mr. Ross did act to prevent proctoring and that Ross in bad faith brought about an improper expansion of the answer keys. We disagree with both conclusions.

2200. The basic allegation against Mr. Ross is founded on YY's inference drawn from a statement attributed by him to Ross. According to YY, Ross said that he, Ross:

had gotten the NRC to expand the answer keys so as to give the examinees more latitude in their answers and also that he had kept the proctor out of the room for a very long period of time. The inference I [YY] drew was that by both actions he made it easier for the people taking the test.

YY's statement to NRC, Staff Ex. 27, Enclosure 1.

2201. The statement even as recalled by YY is equivocal. It is subject to a completely benign inference in that it could mean that Mr. Ross influenced the NRC to expand the answer keys accurately to fairly provide more latitude and that this process took a very long time. As equivocal as the statement is, YY equivocated even more in explaining the conversation from which the statement derived. He explained to the NRC investigators that while he believed that Ross had admitted deliberately facilitating cheating, it was also "possible that he could have been bragging." *Id.* It is clear from a review of YY's statements and the later testimony that when he and others use the term "bragging", or such, they are referring to untruthful bragging in the sense that Ross may have claimed to have facilitated cheating when in fact he had not.

2202. At the hearing YY testified that while *he* does not regard Ross' alleged incriminating statement as untruthful bragging, *others* might have regarded the statement as untrue. He testified that he had therefore clarified his statement to state also that Ross "could have been bragging." Tr. 26,015-16.

2203. Also in his testimony YY repeated his general allegation that he believed Mr. Ross would have acted and did act deliberately to facilitate cheating. Tr. 26,011, 26,015-16. However, in other portions of his testimony, he seems to state that any unfair advantage to the test candidates was an incidental result of normal procedures. He stated:

Q Do you have any first-hand knowledge of Mr. Ross expanding the answer key to any NRC exam in order to give the examinees an unfair advantage in passing the exam?

A In my statement I said and I still feel that Mr. Ross expanded the answer key under normal procedures. It was explained to me that that is a normal procedure, but I feel he also expanded the answer key and in doing that act of expansion he was able to facilitate keeping the proctor from the room for a long period of time; and that keeping the proctor from the room I understand is a normal thing, but I feel that since the proctor was out of the room, that the examinees might have had an unfair advantage which they would not have if the proctor was in the room all the time.

Tr. 26,022.

2204. In his testimony YY also explained that he did not report the reputed conversation until some five months later. Tr. 26,024-25. He stated that at the time he had been bothered because of the type of conversation, but that he had more or less become calloused by that type of conversation. Tr. 26,024. And as he further explained, the type of conversation to which he referred did not involve cheating, but bragging.²³⁸ The clear meaning of YY's testimony is that, at the time the statement was made, he did not believe that Mr. Ross was admitting that he facilitated cheating. It was not until YY learned that O and W were fired for cheating, five months later, that YY may have decided that Ross had admitted to improper actions. Tr. 26,024-25.

2205. In sum: YY heard Mr. Ross make a statement, which even according to YY's recounting of it, as cited above, was not an admission of misconduct. Any sinister meaning depended upon YY's interpretation. The worst implication of YY's testimony is that YY believed that Ross' statement truthfully implied cheating but that others could reasonably have inferred untruthful bragging. Even YY did not think the reputed statement was an admission of cheating when made. He possibly came to that opinion five months later. Even then, it is not clear from his testimony, one way or the other, whether YY finally believed that Mr. Ross

²³⁸ "Q You said, I think, earlier that you had become I think you said callous towards conversations involving cheating. Is that correct or is that not correct?"

"A No, that is not correct. My statement was that I had become calloused to certain types of conversation in the shift supervisor's office, and I think that statement was referring to the bragging that Mr. Ross did or the conversations that he had, the type of conversations that he had. He was a big talker." Tr. 26,030.

deliberately facilitated cheating. YY's allegations were probably honestly made; there is no evidence of malice.²³⁹ But his testimony and perceptions of the meaning of the conversation attributed to Ross are too subjective, internally contradictory, and unreliable to be accepted by the Board.

2206. Others, GG, KK, and RR, recalled statements by Ross (which could have been the basis of YY's inferences), to the effect that the candidates were not to worry in that they did all right on the exam and that he, Ross, ". . . took care of that job". See Staff Ex. 27, at 24, 26-27; Report at ¶¶143-44. Those witnesses inferred from Ross' comments that he had *fairly* broadened the answer keys, and that, apparently by joking, he was seeking to cheer his crew. *Id.* This would have been a very understandable message from Ross to his crew after months of training and a week of examinations. It does not indicate to the Board an improper motive. The views of GG, KK and RR seem more reasonable to the Board than the inferences drawn by YY.

2207. Mr. Ross denied that he deliberately hindered proctoring or that he improperly influenced the answer keys. He stated however, that he could have made some statements which the Board believes are those remembered as benign by GG, KK, and RR, and which also could have been the remarks overheard by YY.²⁴⁰ His testimony did not persuade Judge Milhollin. It is true that his testimony was sometimes uncertain on the matter. It could hardly be otherwise. Mr. Ross had to defend himself against YY's accusations without even knowing who made the accusations or why he made them. YY testified after Mr. Ross testified.²⁴¹ To meet the charges completely, he had to postulate their bases. This is, of course, a due process consideration. But its immediate significance is that Mr. Ross' defense testimony must be measured in light of the fact that he has not been confronted with all the specifics of the accusations. Mr. Ross did however know the essence of the

²³⁹ After considering the Aamodt family's comments on the Board's draft findings on this issue, we have deleted language which implied that YY may have been motivated to make his charges "to get even" because, in his view, O and W were unfairly treated. We still do not know why YY waited to express his concerns, but it is equally possible that the seriousness of the incident with O and W caused him to reassess his understanding of Mr. Ross' alleged statement.

²⁴⁰ In commenting on our draft findings, the Aamodt family stated that "the board concedes that Ross's testimony supported YY's description of the conversations concerning broadening of the answer keys." The Aamodts are flatly wrong; we made no such concession. In fact, Ross categorically denied the charge and could not even remember the conversation recounted by YY. He told the NRC investigators: "that it was possible that he discussed the review of the answer keys with a number of people since everyone was very interested in this and since suggesting necessary changes to the answers was the purpose of the review. He allowed as how he might have commented about how long the reviews had taken but stated that this would have been an observation and not a description of an attempt on his part to distract the proctor." Staff Ex. 27, at 12-13.

²⁴¹ While many company witnesses were assigned code letters to protect their identities from the public, they knew each other's actual identity even though sequestered as witnesses. In YY's case, however, the code letters were used to protect his identity from Licensee's personnel, including Mr. Ross. See Tr. 24,215; 24,217; 26,011-12. To this day, Mr. Ross may not know the full details of the charges against him or who made them.

charges against him. He was provided an excised copy of YY's initial statement to the NRC. The statement was similar to his testimony.

2208. In our tentative draft findings on the Ross issues we noted our belief that some of Mr. Ross' testimony about time lapses seemed to be inaccurate in the direction of exoneration. This is a circumstance which we attribute to faulty recollection and a natural tendency to honestly recall events favoring one's own point of view. Other portions of his testimony we believed to be incredible but honestly rendered. As we noted in the draft, we were left particularly uncertain as to why Mr. Ross testified that he had never learned whether the changes in the answer keys were ever adopted, and that he did not know that one of the two examination rooms had been left unproctored during the answer key review.

2209. Licensee has now directed us to portions of Mr. Ross' testimony where he acknowledges that he had requested the changes, did not know for a fact that they were made (Tr. 24,161), but assumed that some were made (Tr. 24,334). The Board had incorrectly stated in the draft that Mr. Ross had stated to the candidates that changes were made, when in fact his statement was only that the key "was going to be fair". Tr. 24,180. As to the proctoring testimony, the Board had overlooked the fact that a *third* NRC official had been available for proctoring during the "A" exams. Thus, Mr. Ross would not have assumed that the room was necessarily unproctored when the examiner, Mr. Wilson, was busy with the answer key review. Neither the testimony on the answer key changes, nor on the proctoring is incredible, particularly when considered in the light of Mr. Ross' tendency to limit his testimony to his definite knowledge.

2210. Considering YY's accusations against Mr. Ross, and considering the inherent opportunity to adversely affect the validity of the examinations made possible by company review of NRC answer keys, Judge Milhollin very commendably analyzed a sampling of the April 1981 NRC operator exam questions. Report at ¶¶153-78. From the "A" exams he selected eleven questions where answer-key changes were made at the suggestion of the company reviewers and one where an attempt to change the answer key was rejected by the NRC examiner.

2211. As to nine of the examples Judge Milhollin correctly found that the changes were appropriately made in the direction of accuracy. As to one question, E.3 (the sixth analyzed by him), he found that the NRC examiner came to the exam with insufficient data. He therefore accepted answer data from the reviewers and an answer-key change. While Judge Milhollin does not question the change, he is unsettled by doubts about the accuracy of the supplied information. This question however is not used by Judge Milhollin as an example of improper efforts by Mr. Ross and the other company reviewers. Report at ¶169. We agree with this conclusion also.

2212. One of the two remaining questions analyzed by Judge Milhollin, question B.5.a on the "A" RO exam, asked:

- a. What is the purpose of the #1 seal bypass line? Include how opening this line affects the #1 seal. Staff Ex. 33.

2213. The Staff's answer key to B.5.a originally stated:

Lowers the pressure in the #1 seal area, offers lower head resistance to pump injection water, allows more injection flow to be diverted up shaft through the seal and past radial bearing. This prevents binding and contact of seal faces.

Staff Ex. 33 (at Exam B answers).

2214. The company reviewers apparently brought about several changes on the answer key. The first sentence was modified to delete "through the seal and" and to add at the end "for adequate cooling". Over the top of the first sentence was added "lower seal #1 Δ P". The entire second sentence was struck. The answer key as changed, then, was in the following form:

[lowers seal #1 Δ P]

Lowers the pressure in the #1 seal area, offers
lower head resistance to pump injection water, allows
more injection flow to be diverted up shaft ~~through the~~
[for adequate cooling.]
~~seal and past radial bearing. This prevents binding
and contact of seal faces.~~

Id.

2215. Contrary to Licensee's analysis of Judge Milhollin's reasoning (Licensee Comments at ¶63), he did recognize that the added language "for adequate cooling" was intended to be a response to the first part of the question, *i.e.*, the purpose of the #1 seal by-pass line is to cool the radial bearing. Report at ¶156. Judge Milhollin, however, failed to give credit to the company reviewers for recommending this clarifying change. In fact all but one of the operators indicated the bearing-cooling effect in their answers. *See* Licensee Comments at n.2.

2216. However, once the NRC examiner agreed to drop the answer "This prevents binding and contact of seal faces" the answer key no longer seemed to satisfy the second question, "Include how opening this line affects the seal." This factor is central to Judge Milhollin's conclusion that the change was improper. This too was the basis for the Board's earlier tentative finding that that change to the answer key to question B.5.a was clearly improper.

2217. But, as we now know from Licensee's comments, both Judge Milhollin and the Board failed to note and to account for the phrase "lower seal #1 Δ P" inserted over the answer key. Therein may be found the solution to this puzzle, according to Licensee.

2218. Judge Milhollin found that eight candidates answered the second portion of this question as the Staff would have the answer but for Mr. Ross' intervention. But in Licensee's view, the answers provided by six of them suggest that opening the line *could cause rather than prevent* binding and contact of seal faces. These

answers also suggest that this potential damage would occur by lowering the ΔP , or equalizing the pressure on the seal, thereby producing the potential for excessive wear on the #1 seal (along with the #2 seal). Licensee Comments at ¶165.

2219. Surely, as suggested by Licensee, opening of a bypass line on one side of a seal can lower the ΔP across the seal, hence reducing water flow through the seal. And if this water flow becomes low enough, it is possible to overheat, wear, and fail the seal. This scenario, as Licensee states, was described by some of the license candidates in their exams. See Licensee Comments at ¶63.

2220. Although we cannot find from this record which answer is correct, we do find the change apparently recommended by the company reviewers is just as likely to be correct as the Staff's original answer. We therefore do not find that the change was incorrect or improper.

2221. The remaining question sampled, Question C.2.b (the fourth analyzed by Judge Milhollin), noted that pH control is important to minimize corrosion of primary and secondary components and that primary pH can vary from 4.6 to 8.5. Candidates were directed to: "Describe the *competing* effects that determine primary pH and cause it to vary in this manner." Emphasis added. The answer key required as a part of the answer: "Boric acid and lithium hydroxide concentrations compete." Report at ¶161. The reviewers argued for a change which would permit reporting only the manner of controlling pH with lithium hydroxide without reference to boric acid. Mr. Wilson refused to change. The candidates were about evenly split on including boric acid in their answers. See Licensee Comments at n.5 and n.6. Mr. Ross gave the partial answer, but another reviewer, Mr. Boltz, gave the full and correct answer. *Id.*

2222. Judge Milhollin finds that Mr. Ross and Mr. Boltz improperly argued for the change. Report at ¶166. We agree that the proposed change was properly rejected but we cannot find that the attempt was unconscionable in view of the difference between the chemistry lectures in training (the complete and correct answer) and actual plant practice.

2223. In reviewing the answers it is obvious that the candidates who did not include boric acid (and, for that matter, even those who did) recognize that primary pH is controlled by lithium hydroxide, not by boric acid. It is understandable why only lithium hydroxide would come to mind to some of them even though the *competing* effects are called for. It is clear however that the answer based upon actual plant practice would not respond literally to the question, which incidentally was inartfully worded in that it called for competing *effects*.

2224. Mr. Ross' and his colleagues' successful effort to change the seal-face question (B.5.a) and their attempt to change the primary pH question (C.2.b) are the bases for Judge Milhollin's conclusion that they acted in bad faith. Report at ¶177. The essential issue is not whether the changes recommended by Mr. Ross and the company reviewers were correct, but whether they were made in good faith. We were persuaded before, when we believed that the changes in the answer

key to question B.5.a were clearly incorrect, that they were nevertheless made in good faith. Now that we have concluded that either explanation of the effect on the seal face is rational, there is even greater reason to conclude that the changes were suggested in good faith.

Conclusions: Mr. Ross

2225. We conclude that YY's accusations against Mr. Ross are incredible, an analysis of the two questions cited by Judge Milhollin leads us to the conclusion that the change recommendations were made in good faith, and there is no aspect of Mr. Ross' testimony bringing his candor into question. All of the charges made against him are unfounded. No misconduct may be imputed to the Licensee.

Radiation Work Permits: Harry E. Williams, Jr.
(Report at ¶179)

2226. Judge Milhollin correctly refused to accept the incredible testimony of the Aamodts' witness on Issue 6 (alleged cheating in a radiation work permit test in April 1979). No other evidence was presented in support of the issue, which is, therefore, resolved in favor of Licensee.

The Definition of "Management"
(Report at ¶¶181-183)

2227. Judge Milhollin explains that there is little value in choosing between Licensee's definition of management ("exempt [non-union] employees") and the Staff's definition (those who control the actions of more than one shift). We agree. We do not, however, adopt the portions of Judge Milhollin's analysis where he summarizes his findings as to the cheaters at TMI in that we depend on our own particular conclusions on the named individuals. It should be noted again that VV, who is said by Judge Milhollin to be a link between upper management and the operations staff (at ¶183), was not a member of TMI-1 management at any time relevant to this proceeding.

C. The Licensee's Response to the Cheating
(Report at ¶¶184-237)

2228. The Licensee's management responded to three different types of cheating: first, the cheating on the NRC examination in April 1981; second, the cheating on the weekly quizzes; third, the cheating by VV and O in 1979. In

general Judge Milhollin gives the Licensee poor marks. We agree in some instances and in others we disagree. The first situation evaluated by Judge Milhollin relates to Licensee's reaction to the NRC investigation of the O and W cheating episodes.

Management Constraint on the NRC Investigation (Report at ¶¶185-88)

2229. When the similarities on O's and W's NRC examination answers were discovered, the NRC's Office of Inspection and Enforcement (OIE) began the first investigation with which this reopened proceeding is concerned. O and W were interviewed by OIE investigators in Bethesda. GPU Nuclear President Arnold directed TMI-1 Vice President Hukill to make a management official available for the OIE interview if requested by either employee. O and W did elect to have a company representative sit in on their interviews. At the outset there was a confrontation between Mr. Hukill and OIE investigator, Mr. Baci, who wanted to interview O and W without management's presence. The matter was temporarily resolved when Mr. Arnold phoned OIE Director Stello who directed the investigators to permit the interviews in that investigation to proceed under the condition that the company personnel be advised that, at their option, a company representative could be present. Several employees in addition to O and W were interviewed with management present.

2230. By the time the second investigation began (the one concerning YY's allegations against Mr. Ross), Mr. Stello, having received legal advice, decided that a company representative need not be and should not be present. Mr. Arnold also had been advised by counsel that he may not require that a company representative be present. As a result, the remaining investigations proceeded without incident between the Licensee and OIE, and without management presence during NRC interviews. The NRC Staff believes that the company presence during the first interviews was inhibiting but that the overall effectiveness of the investigation of O and W was not affected. Since the evidence gathered against O and W was strong, we have to agree. The Staff does not believe that the company was motivated by a desire to constrain OIE. The Licensee states that the company did not intend to constrain the NRC's investigation, nor were its employees inhibited by management presence. Licensee points to a previous NRC practice of allowing company representatives to be present during on-site OIE interviews with utility personnel as an indication that it initially proceeded in good faith.

2231. Judge Milhollin concludes that this action by Licensee's management was improper, but he does not find that the NRC investigation actually was constrained, other than that there was a "burden on the flow of information". Report at ¶188. In the Board's view, this episode has received more attention than

it warrants. It seems to be a situation where the regulatory scheme worked as intended. The regulated utility had different perspectives and responsibilities than those of the NRC. After the initial confrontation, the participants acted without friction.

2232. From the Licensee's point of view, Judge Milhollin recognized that Mr. Hukill's avowed purpose of making sure that his people were treated fairly was legitimate. We agree, but with some reservations in that this is not the Licensee's highest function. Conflicts of interest could interfere with that effort and the public had an interest in an unrestrained flow of information. We were more persuaded by Mr. Hukill's other reason for wishing to be present or represented. He explained that ". . . by attending, I would gain first-hand knowledge of the scope of the problem with which I was faced as Vice President of TMI-1." Hukill, ff. Tr. 23,913, at 9. Were it not for the possible inhibiting effect, it would be management's duty to be present at interviews to learn both the "scope" and the details of its problem. To meet its responsibilities to the public, the NRC, its ratepayers, owners and employees, management should have made every reasonable effort to stay on top of the NRC investigation.

2233. Licensee offers some examples of why it believes that Mr. Hukill was prudent in not wanting to rely upon the recollections and records of the OIE investigators to satisfy management's need to be informed. Licensee Proposed Finding ¶292. We have not paused to analyze these examples; it is unnecessary to do so to resolve this issue. A patent example comes to mind from our own evaluation of the incident with P and Mr. Husted. OIE investigator Ward believed that Mr. Husted solicited P for an examination answer (¶2148, *supra*), but because the alleged solicitation was thought to be unsuccessful, Mr. Ward and OIE management decided not to include the episode in the final OIE report. We have found of course that the evidence does not support that accusation against Mr. Husted. But Mr. Ward's opinion that Mr. Husted did solicit remains as a demonstration of the kind of information that Mr. Hukill should have had if Licensee's management were to be able to conduct the inquiry it is now faulted for not conducting.

2234. The NRC Staff's intuition that it should interview the company employees without management's presence was sound, and it correctly enforced this right after first faltering. The Board concludes that the incident is without important significance in this reopened proceeding.

Management's Dealings with O and W (Report at ¶¶189-90)

2235. Judge Milhollin faults Licensee's management for not pursuing with O and W the reasons why they cheated. Mr. Arnold's position was that such inquiry would not have been productive in that Licensee would have to explore every

potential reason for cheating regardless of the reasons given by O and W. We believe that Licensee passed up an opportunity to explore with O and W possible weaknesses in the training and examination programs, and to spotlight particular morale problems. Licensee admits that in retrospect Mr. Arnold probably should have asked them why they cheated. Comments at ¶95.

2236. Judge Milhollin concludes that the reason management did not need to ask was because it knew that the cheating was caused by disrespect for the NRC examination. Report at ¶190. Licensee, for reasons that are not apparent to the Board, seems stung by that conclusion. Comments at ¶95. On the other hand neither do we understand why Judge Milhollin selected that reason from among many possible reasons, and why he imputed that knowledge to Licensee. Our conclusion is merely that Licensee's decision not to pursue the matter was one of many judgments that had to be made and this one turned out wrong. In any event, O and W were examined thoroughly during the reopened hearing on the issue.

Management's Meeting with Employees (Report at ¶191)

2237. After the discovery of the O and W cheating incident, Mr. Arnold, and then Mr. Hukill, met with the TMI-1 operations staff. There were several meetings, first with the entire staff, then by shift, then with each member of the staff. We are satisfied that the company made clear its attitude that cheating will not be tolerated and that this message was clearly understood. *E.g.*, Tr. 25,701 (GG). Management also explained that despite resistance by the operators, written examinations were required by the company and by the NRC as objective measures of their competence.

2238. Mr. Hukill explored with each operator whether he had cheated on any of the examinations and whether he knew of any other involved person. Licensee believes that the only example of additional cheating developed by these interviews was the incident reported by Mr. Shipman, which, as we noted above, remains unresolved. Judge Milhollin, however, finds that OO reported that "cheating on exams in [the] past has been commonplace and accepted." The cited evidence (TMIA Ex. 60) is Mr. Hukill's notes in which he recorded that OO stated that OO did not cheat nor does he know anyone who did, but that he heard "all kinds of rumors" that cheating on exams had been commonplace and accepted. *Id.* It is not clear what, if anything, was done about OO's report of rumors, as we discuss below at ¶2261.

2239. Of particular significance is the fact that management learned that the operators resented the reexamination requirement imposed upon them when other operators around the country are free from such requirements. Hukill, ff. Tr. 23,913, at 12.

2240. Judge Milhollin reached no conclusion about management's meeting with its employees. Our review of the evidence indicates that Licensee took appropriate actions to meet with its operators, both to receive information and to impart company policy on the need for the examinations and honesty. However, the record does not reflect what, if anything, management has accomplished in bringing about employee acceptance of the NRC's responsibility to ascertain by objective means that the TMI-1 operators are qualified.

Management's Response to the Shipman Incident (Report at ¶¶192-95)

2241. The unidentified person who asked Mr. Shipman for an answer to an exam question was probably one of eight candidates in the smokers' room during the "A" exams in April 1981. See ¶2139, *supra*. While each of them was questioned in general by Mr. Hukill as to whether he cheated or knew of cheating, they were not interviewed concerning the particular incident with Mr. Shipman. Judge Milhollin explains why this would have been easy and useful and we agree. Licensee admits that the eight candidates should have been asked specifically about the incident. Comments at ¶98.

2242. We do not adopt the inference drawn by Judge Milhollin that "If the Licensee had been trying to find Mr. Shipman's questioner, such a step would have been strange to omit." Report at ¶193. We find no evidence that Licensee failed to conduct the interviews because it was deliberately not trying to identify cheaters.

Management's Response to Rumors about U (Report at ¶¶196-99)

2243. The rumors that someone, perhaps U, was stationed outside the examination rooms to help the candidates cheat were very serious — particularly that aspect of the rumors that management had stationed such a person there for that purpose. ¶2171, *supra*. The Licensee did not investigate this rumor because the OIE investigators interviewed U on the subject. Wilson, ff. Tr. 24,478, at 14. Judge Milhollin lists several reasons why this omission was important and what more could have been done in this regard. Report at ¶198.²⁴²

2244. Licensee explains this failure by stating that Mr. Arnold had decided to ensure that there would be no actual or perceived interference with the NRC investigations, and therefore Licensee would not investigate a particular matter until the NRC had completed their [respective] investigation. Licensee Comments

²⁴² In addition it appears that Mr. Hukill, during his program of interviewing each operator, overlooked asking U about the rumors that he used crib sheets. Tr. 24,079.

at ¶100, *citing* Arnold, ff. Tr. 23,590, at 5, and Tr. 24,607 (Wilson). Since this rumor had implications of potential management involvement in cheating, Licensee argues that the matter was particularly appropriate for the NRC pursuit and particularly inappropriate for management itself to pursue. Comments at ¶101.

2245. Mr. Arnold's judgment to defer any investigation on a particular matter until the NRC had completed that aspect of the inquiry, was made in the context of the company interference perceived when management tried to be present during the OIE interviews of O and W. Arnold, ff. Tr. 23,590, at 5. It is a rational decision with which we do not disagree.

2246. The decision by Licensee's investigating attorney, John Wilson, not to investigate this rumor or even confront U with it because OIE did so was a very bad reflection on his judgment. And it is imputable to Licensee. Mr. Arnold's stated policy clearly was to investigate particular matters *after* the NRC, not *instead* of the NRC. We do not accept, in fact, we flatly reject Licensee counsel's argument that management involvement in the rumor was a justification for leaving the matter to the NRC for investigation. In our view, the higher the management alleged to be involved, the greater was Licensee's overall corporate responsibility independently to inform itself. Licensee deserves Judge Milhollin's strong rebuke on this failure. However, Licensee does not deserve the implication that it knowingly selected for investigation only matters unlikely to implicate management. Report at ¶199.

Management's Response to Cheating on Weekly Quizzes (Report at ¶¶200-37)

2247. Licensee determined that one appropriate area for its investigation would be to review those exams and weekly quizzes required for initial qualification or requalification for NRC operating licenses.²⁴³ See Licensee Proposed Finding ¶243; Tr. 24,495, 24,587-88 (Wilson). We find no fault with this approach. The material reviewed was voluminous and was the most important body of test information outside the NRC's own licensing examinations.

2248. Licensee selected Mr. Edward V. Trunk, an assistant professor of engineering at Pennsylvania State University, who was assisted by a colleague, Donald Miller, to evaluate the questions and answers on the company exams. As Judge Milhollin and the Board find, Messrs. Trunk and Miller identified many sets of suspicious parallelisms. In our view their work was thorough and competent. The material they reviewed was made available for examination by Judge Milhollin, the Board and the parties. Thus it has been carefully reviewed by many

²⁴³ The "Kelly" exams, Category T make-up quizzes, ATTS exams not previously reviewed by the NRC, "Kelly" non-Category T make-up quizzes and a 1979 mock NRC exam were chosen for review.

separate individuals seeking parallelisms in the answers. Although a few, less obvious, additional similarities were found, Messrs. Trunk and Miller appear to have identified most of them. Their assignment stopped at that point.

2249. Licensee assigned its attorney, John Wilson, to investigate the parallelisms identified by Mr. Trunk and Mr. Miller. He was also assigned certain other tasks in Licensee's investigation of the cheating incidents. He was assisted by an associate, Mr. Lloyd. Judge Milhollin criticizes Mr. Wilson's work very severely as he analyzes Mr. Wilson's opinion on the parallelisms identified with respect to G and H; and MM, GG, and W.

2250. We begin our decision on this portion of Judge Milhollin's Report with a somewhat different approach to the issue compared to that of Judge Milhollin and the commenting parties. First, while we believe that Mr. Wilson was naive in accepting the denials of some of the candidates, too much has been made of his opinions, whether correct or not. It is not clear from the record whether he was presented as an expert on whether the parallelisms indicated cheating, or merely to explain factually Licensee's approach in investigating the parallelisms. His opinions on cheating have little value. He is not an expert in this field, and even if he were, it is for Judge Milhollin and the Board to arrive at their own respective opinions on these issues. This we have done after a direct examination of the evidence, including the testimony of those whose denials Mr. Wilson accepted. There was, however, some utility in presenting Mr. Wilson's opinions and their underlying logic. It permitted a testing of his, thus Licensee's, reasoning during the hearing.

a. G and H
(Report at ¶¶202-15)

2251. Judge Milhollin's analysis of why he believes Mr. Wilson performed poorly in his investigation of G's and H's parallel answers necessarily tracks very closely Judge Milhollin's and the Board's reasoning in concluding that G and H cooperated. *See* Report at ¶¶26-77 and ¶2096, *supra*. There is no need to repeat our analysis here. We depart from Judge Milhollin's analysis of Mr. Wilson's performance on several points however.

2252. Although we agree that Mr. Wilson unreasonably allowed G and H to convince him that the many parallelisms were not the result of cheating, we attribute this to naivete and to a possibly unconscious loyalty to the company and employees, *i.e.*, a natural inclination to believe in their honesty. It is true, as Judge Milhollin observes, that Mr. Wilson presented considerable information which tended to show the absence of cheating, and none, that we can identify that showed the presence of cheating. Report at ¶213. This circumstance we believe can be explained, in part, by the nature of the evidence possibly available in either direction. Common training materials, for example, to explain honest parallelisms

are producible. Other than the parallelisms, and perhaps an observing witness, what kind of evidence tending to establish cheating by G and H could Mr. Wilson have found? Judge Milhollin, however, points to areas where Mr. Wilson could have but failed to inquire concerning circumstances conducive to cheating. One comes away from an appraisal of Mr. Wilson's investigation of G and H with the impression that he worked harder in developing exculpatory information than he did in developing evidence of cheating. See Report at ¶¶213-14.

2253. Judge Milhollin finds (at ¶210) that Mr. Wilson misrepresented statements by G and H on the very similar Bernoulli's equation answers. See ¶2104, *supra*. G and H had testified in a manner contradicting each other. Mr. Wilson's prepared testimony failed to reveal any contradiction where he recounted his earlier interviews with G and H. Wilson, ff. Tr. 24,478, at 8. Licensee takes strong issue with Judge Milhollin's findings concerning Mr. Wilson's candor. Comments at ¶110. Licensee's counsel argues that perhaps G and H ". . . provided subtly different answers earlier, during the Wilson interview." *Id.* In view of our own findings that the testimony by G and H on the Bernoulli's equation was incredible, we believe that it is reasonably possible that G or H did in fact provide information to Mr. Wilson which differed from their later testimony before Judge Milhollin. Also, it is possible that Mr. Wilson did not notice the contradictions. Accordingly, we do not find that Mr. Wilson misrepresented G's and H's explanation. Licensee cannot have it both ways, however. If G and H gave differing explanations to Mr. Wilson and to Judge Milhollin, it is an additional reflection upon their credibility.

b. S and Y

(Report at ¶216)

2254. Judge Milhollin finds that Mr. Wilson's methods and conclusions with respect to the parallelisms on S's and Y's answers were reasonable. We agree. This is not in dispute.

c. GG, W, and MM

(Report at ¶¶217-19)

2255. We came to about the same conclusions as did Mr. Wilson in the evaluations of the similarities among the answers of MM, GG and W. ¶2134, *supra*. Both the Board and Mr. Wilson concluded from uncertain evidence that W probably copied from GG. Judge Milhollin, however, found that the evidence suggests that GG copied from W, but found that, standing alone, the evidence would not support that conclusion. Neither the Board, Judge Milhollin nor Mr. Wilson reached any conclusion adverse to MM.

2256. It is not, therefore, Mr. Wilson's conclusions regarding MM, GG and W which bring about Judge Milhollin's criticism, but rather the adequacy of Mr. Wilson's investigation of the parallelisms. We agree with Judge Milhollin. In addition, we note that Mr. Wilson did not interview W because by that time he was no longer employed by Licensee. Wilson, ff. Tr. 24,478, at 12. We believe that he should have at least attempted to interview W nevertheless. As we found in our discussion of the incident, in view of the very strong and frequent parallelisms between GG's and W's answers, it must be concluded that GG knowingly condoned copying by W. Mr. Wilson simply accepted GG's statement that "W may have looked at his (GG's) exam without his (GG's) knowing." *Id.* at 12. Here we believe that Mr. Wilson was too easily convinced. If he had followed through with an interview of W, he might have been disabused of that naive conclusion.

Mr. Wilson's Performance Imputed to Licensee

2257. At this point in our initial decision we depart from the organization followed in the Special Master's Report. Here we note and summarize some of the additional deficiencies we believed to exist in Mr. Wilson's investigation and the significance of Mr. Wilson's performance to this proceeding.

2258. The scope of Mr. Wilson's assignment is not clearly set out in any one place. His testimony emphasizes the investigation of the parallelisms noted by Mr. Trunk and his colleague. Wilson, ff. Tr. 24,784, at 1. He also reported his investigation of two other sets of rumors. The first was the one about U having been placed near the examination room to aid the NRC license candidates (*id.* at 13-15), as to which we have criticized him for not even questioning U about the matter.

2259. His other assignments relate to those rumors among employees' wives to the effect that U had written notes on his hand and had used crib sheets in the April 1981 NRC examination. *Id.* at 15-17. As to this assignment, it appears that Mr. Wilson was very diligent. Along with Mr. Arnold, he optimistically tried to trace the source of these rumors. *Id.*

2260. Other portions of Mr. Wilson's testimony indicate that much of his time must have been spent in assisting the NRC investigators to arrange for interviews with the TMI-1 employees. *Id.* at 18-19. Apparently in recognition that we might perceive John Wilson's investigation as too limited, Licensee argues that it was reasonable in scope because other meetings and interviews were being conducted by Messrs. Arnold, Hukill, Herbein and Richard Wilson. Licensee Comments at ¶103.

2261. This we believe may be an indication that Licensee had a rather unstructured approach to the investigation, which in turn may explain why, when on October 12, 1981, OO reported to Mr. Hukill that OO had heard rumors that cheating had been commonplace and accepted (TMIA Ex. 60), no company

official recognized the responsibility to investigate the matter further. This was the second time that Mr. Hukill had heard about OO's rumors. The first account he sent to Mr. John Wilson on July 30, 1981. TMIA Ex. 58. Mr. Wilson did nothing about the rumors. Mr. Hukill himself did not know whether Mr. Wilson or any other part of the company investigated OO's report. Tr. 23,925. Mr. Hukill regarded himself only as an observer, apparently because the NRC was in the first instance conducting an interview of OO. *Id.* It seems that the rumors heard by OO fell into the cracks during the company investigation. Fortunately OO was available to testify.

2262. On the subject of Mr. Wilson's investigation of the weekly quizzes, the Board agrees with the Commonwealth of Pennsylvania (Proposed Findings at ¶73.4), that there were several other important defects in Mr. Wilson's approach to the investigation. He simply accepted the oral denials of the suspected operators. Tr. 24,563 (Wilson). He should have taken their affidavits, or perhaps even have deposed them. That way, for example, any contradictions in the testimony by G and H would have been memorialized for careful analysis. Moreover, there is a greater incentive for truthfulness in statements under oath.

2263. In assessing the credibility of the suspected operators he did not evaluate their academic backgrounds. Tr. 24,626 (Wilson). He did not avail himself of Mr. Trunk or GPU technical personnel to determine whether the explanations given by the operators were technically credible. Tr. 24,599 (Wilson).

2264. And the most important criticism of all, also leveled by the Commonwealth, is that members of upper GPU management did not substantively review the results of Mr. Wilson's evaluation of the parallelisms. Commonwealth Proposed Finding ¶73.4, *citing* Tr. 23,955-56 (Hukill) and Tr. 23,880 (Arnold).

2265. Mr. Wilson indicated that he had spent virtually all of his time since the discovery of cheating to the time of his testimony at the hearing working on the investigation. Wilson, ff. Tr. 24,484, at 3. It is very likely that he did not have time to do all of the things we and Judge Milhollin believe that he should have done, but his testimony does not even acknowledge that more should have been done.

2266. Mr. Wilson's testimony does not give the impression of impartiality. Perhaps it would have been better if Licensee had employed a totally independent investigator to coordinate its inquiry, but we do not second-guess management on that account. After many years of legal service with Licensee, Mr. Wilson was already familiar with the TMI operations and personnel. As an attorney he was probably as well trained as anyone then available to interview Licensee's employees. Licensee could scarcely afford to waste time in organizing its investigation. Turning to Mr. Wilson is understandable. We conclude however, that Licensee was culpable in its uncritical acceptance of Mr. Wilson's work when there are so many indications of its inadequacy.

Conclusions on Licensee's Investigation

2267. It is very difficult to assess whether Licensee's investigation of the cheating incidents was adequate. For want of better standards we have evaluated the investigation with the traditional tests of whether the undertaking was well conceived and designed, whether sufficient resources were devoted to it, whether it was well executed, and whether it had good results.

2268. We find some fault with the concept and design of Licensee's investigation. Selecting Mr. Trunk and assigning an attorney full time to the inquiry was sound. The active participation of Mr. Arnold and Mr. Hukill lent the investigation useful prestige. We have noted however that there did not appear to be an overall coordinator or clearinghouse for information thereby allowing leads to go undeveloped, such as Mr. OO's report of rumors. On balance, however, we give a passing grade on the plan of investigation.

2269. There is no evidence that Licensee stinted in the resources allocated to the investigation. Both Mr. Trunk and Mr. John Wilson had assistance available to them. Mr. Richard Wilson, GPU Nuclear Vice President for Technical Functions, also participated in the investigation. Mr. Hukill invested a large amount of his time in meeting with the operating staff. Mr. Arnold was deeply involved even to the point where he interviewed employees about rumors among their wives. The very active participation of Messrs. Arnold and Hukill was also a very valuable contribution because it demonstrated to the operating staff that the highest level of Licensee's management was determined to correct the problem. We give a high grade on the resources committed and good intentions of Licensee management in the investigation.

2270. With respect to execution, our attention was naturally drawn to those areas where we would have proceeded differently. But the Board has had the benefit of a very large distillation process in that the parties and Judge Milhollin have spotlighted for us areas of deficiency. In the few months between the first revelations of cheating until the hearing began, Licensee had to make many decisions and there was no procedural manual to guide the investigators. We agree that every conceivable lead could not be followed. By the time the hearing began, with the sequestration order in effect, no further investigation by Licensee or the Staff was possible. The investigation did not go far enough in several areas, particularly where Licensee yielded to the NRC Staff some of its responsibilities. We also believe that there may have been a failure on the part of Mr. Arnold or Mr. Hukill to see the investigation through to the very end. A thorough evaluation of Mr. John Wilson's work, we believe, could have changed Licensee's positions as to G and H. As to execution of the investigation, we score Licensee somewhere on the border between failing and passing.

2271. One cannot measure the success of an investigation unless the expected results are known. We do not know if Licensee's investigation turned up all

possible instances of cheating on company-administered exams, but we cannot infer that it was an unsuccessful inquiry. After intense scrutiny of the weekly examination papers and after thorough questioning under liberal cross-examination by intervenors and the Commonwealth, and after Judge Milhollin's own very careful inquiries, little was discovered in the way of concrete evidence of cheating beyond that disclosed by Licensee's own inquiries. Measuring Licensee's investigation by its results may not be sufficiently reliable to pronounce it successful, but neither can Licensee be failed on that basis. The Board concludes that the Licensee conducted an adequate investigation into the cheating incidents.

Management's Response to Cheating by VV and O in 1979 (Report at ¶¶220-37)

2272. VV was the supervisor of operations at TMI-2 as of July 1979 and until he was relieved of that assignment shortly thereafter. O is the person discussed throughout this proceeding as one of the cheaters on the April 1981 NRC licensing examination. The events involved in this incident do not directly relate to the reasons for reopening the evidentiary hearing. The matter is significant in that it relates to management's general response to cheating and the conduct of Gary Miller, who was then TMI station manager and who is now GPU Nuclear's start-up and test director.

2273. In August 1977, VV who then held a TMI-1 operator license, passed a cross-licensing exam for Unit 2 with an overall grade of 70%. Because of an NRC-required administrative procedure (Administrative Procedure 1006, TMIA Ex. 65) he had to participate in a special portion of the next company requalification program known as Fundamentals and System Review (FSR) in two areas where he scored less than 80%.²⁴⁴ On his TMI-1 operator's requalification exam in February 1978 he passed, but this time he failed to score the needed 80% on three areas. On weak area was also a weak area on the cross-licensing exam, so he had to train in four FSR sections.

2274. He didn't attend FSR classes and therefore was given closed-book take-home exams which he didn't return. Because of a grace period, it wasn't until July 1, 1979 that he finally faced suspension from licensed duties. By then he was desperate. On the evening of July 1, 1979 he was faced with an absolute deadline, and he was also faced with vacation plans beginning the next day. After work VV induced O to help him. VV (or someone on his behalf) turned in O's work, in O's handwriting, as part of VV's own work. The training department detected the handwriting differences. O was absolved, VV was said to be disciplined for his

²⁴⁴ Under current grading criteria an overall grade of 70% is not enough. The candidate must achieve 70% in each area and 80% overall. See PID ¶268, 14 NRC at 476, citing NUREG-0660, Task I.A.3.

conduct, and VV was later recertified to the NRC for his license renewal based in part, as we find, upon work done for him by O. The incident raised three issues: Did Licensee deal correctly with O; with VV; and with the NRC in recertifying VV?

Excusing O

(Report at ¶¶223-27)

2275. O denied that he knew that the work he did for VV was to aid him improperly on an exam. Mr. Miller, who took charge of the investigation, stated that he believed O and therefore took no action except to warn O not to do it again. O is no longer employed by Licensee; thus the only issue involving him is whether Mr. Miller was too easily convinced by O; or whether he was convinced at all — possibly he only stated that he was convinced. Judge Milhollin believes that Mr. Miller was correct in not imposing a greater sanction on O because O's status as VV's subordinate made it difficult for O to refuse to help. Report at ¶236. But Judge Milhollin implies that Mr. Miller should have admitted that was the reason, and he should not have advanced a theory that he believed O's lack of knowledge. *Id.* at ¶227.

2276. After evaluating the testimony and the exhibits, we believe that Mr. Miller was probably too easily convinced by O, but we cannot find from the record that Mr. Miller knew that O was deceiving him. Given the benefit of now knowing about O's willingness to cheat, and after a very thorough study of the circumstances, we can rather easily arrive at the conclusion that O must have known he was improperly helping VV. But considering the pressures on Mr. Miller in the months following the accident, O's excellent reputation and Mr. Miller's presumed concentration on VV's misconduct, we cannot find that he knew that O knowingly aided VV to cheat. Also, we are unwilling to infer what Miller's state of mind was about what O's state of mind was about VV's motives.

Sanctions Against VV

2277. After the training department graded VV's (and O's) work and noted the handwriting differences, VV was nevertheless given credit for O's help in his grade. But he failed to achieve 80% on two sections even with O's help. Therefore, VV was relieved of licensed duties and assigned to a requalification program with the thought of requalifying him for licensed duties.

2278. In the meantime, Mr. Miller confronted VV with the handwriting differences. VV readily admitted that O's input was not VV's own work, but stated that he had not tried to deceive the training department. Mr. Miller accepted VV's account based in part upon the fact that the instruction for the make-up exams did

not expressly prohibit help (Miller, ff. Tr. 24,358, at 5), and in part upon VV's explanation that he believed that understanding the subject matter, not handwriting, was the significant factor. Tr. 24,396 (Miller). Licensee would have us find that Mr. Miller also acted on the belief that VV would have copied O's work into his own handwriting if he had been trying to deceive. Licensee Proposed Finding ¶312. However, Mr. Miller did not say this in his testimony. See e.g., Tr. 24,396. An equally likely explanation is that VV, eager to go on vacation, simply took a chance. The latter explanation would be consistent with VV's known impatience with training assignments.

2279. We conclude that VV's statement that he didn't know that he couldn't turn in another's work as his own is incredible. Mr. Miller should not have accepted that account. But we recognize that Mr. Miller correctly concluded that, in any event, VV should have known that he had violated training policy. Mr. Miller's conclusion was that VV's poor judgment in this incident and VV's general lack of regard for the training program required a penalty. He recommended a one-week suspension without pay and recommended that a letter describing the situation be placed in VV's personnel file.

2280. Med Ed Vice President Herbein would have increased the suspension to two weeks, but Mr. Arnold decided instead that VV should be relieved as TMI-2 operations supervisor. It is the adequacy or inadequacy of Mr. Arnold's action that gives rise to the subissue of whether Licensee took effective action to discourage cheating.

2281. When the matter came to Mr. Arnold's attention he did not regard the episode as cheating, and did not recognize then that VV's deception involved his licensing requalification assignment. Tr. 23,707-08 (Arnold). Nevertheless Mr. Arnold regarded the incident as one more manifestation of VV's poor judgment and a part of "the total spectrum of concerns" about VV's performance as a manager. Tr. 23,710 (Arnold). Mr. Arnold decided that VV did not have the talents of a manager, and insisted that he be removed from supervisory duties. As a consequence VV was assigned to an *ad hoc* group gathering information about the accident at Unit 2 and today he holds a staff position involving liaison with outside organizations in research and development. This action was never discussed between Mr. Arnold and VV, but Arnold believes that it was widely recognized as an action unfavorable to VV's career. Tr. 23,772. VV was never told that his reassignment was punitive. Tr. 23,775-76 (Arnold). Mr. Miller, however, made it clear to VV that his conduct was unacceptable. Tr. 23,396 (Miller).

2282. VV did not receive a salary reduction, but the two positions counterpart to VV's previous position, the present operations managers of the TMI units, have each received salary increases at a much higher rate than VV has. Licensee Ex. 81A. Yet VV regarded his transfer as a lateral one, or at least professes that is the case. Tr. 26,642 (VV). VV did not regard his treatment as punitive and believes that the majority of his co-workers do not even know about the incident nor does he

want them to know. Tr. 26,675 (VV). Some of the operators who testified on the subject did not believe that VV was demoted. Report at ¶232.

2283. Judge Milhollin concludes that Mr. Arnold's handling of the VV episode was deficient. Report at ¶237. First he finds that VV's reassignment was motivated by other indiscretions, not the training episode. We disagree. Mr. Arnold made it clear, and the general tenor of his testimony was that while there were previous problems with VV's performance as a manager, the episode on the training exam was the triggering event. *E.g.*, Tr. 23,732. There were no other examples of poor performance by VV identified which at the time could have been the immediate cause of his reassignment.

2284. Judge Milhollin does not believe that VV's reassignment was in fact a demotion, or sufficiently punitive to be a deterrent. Report at ¶236-37. To this we would demur. In most success-oriented hierarchies, removing a management person from a direct in-line operations position to a non-supervisory supporting staff position would be regarded as an adverse action. Certainly Mr. Arnold, with his Navy background, would regard VV's reassignment as a move out of a more promising career track. The fact that VV believes it was not a demotion, or says so, may simply be a manifestation of his own career aspirations. Or it may be that he does not want to accept or admit the significance of his transfer. Under the circumstances, it is likely that most of VV's peers in middle management saw his reassignment as a demotion, or at least as an impediment to advancement.

2285. Moreover we believe that Mr. Arnold's stated approach correctly minimized the question of whether VV was being punished. VV was by all accounts technically extremely competent. In fact when he finally focused on his training assignment he scored 99.8% on written exams. Mr. Arnold repeatedly praised VV's technical skills. He said that VV had "a sense for the plant, a feel for it." He was "comfortable with machinery, and how it works and how it interacts in a dynamic way." Tr. 23,757. He had performed well as a Senior Reactor Operator at TMI. VV had worked long and hard in the recovery of TMI-2 following the accident (Tr. 25,096 (Boger)), a fact which may have been a contributor to the problem VV faced in July 1979. His training delinquencies began before the accident, however.

2286. His skills and experience were sorely needed at TMI. VV was not, however, a very good manager. *E.g.*, Tr. 23,742 (Arnold). We infer that Judge Milhollin and intervenor TMIA believe that VV's reassignment should have been called a demotion, and that the demotion should have been specifically made known to VV and to the entire operations staff. Report at ¶¶236-37, 335. These actions, of course, would have humiliated VV. We have rarely seen competent managers attempt to solve their personnel problems in this manner, either in government, industry, commerce or academia. Moreover, a humiliation would have been very destructive, we believe, to VV's effectiveness, particularly in his ability to work with others. It would not have made a contribution to safety. In

sum, we view Mr. Arnold's reassignment of VV to be an appropriate reallocation of company personnel resources. He prudently matched VV's abilities to the right job for him, or at least he corrected a mismatch. We do not find that VV's reassignment was an inadequate remedy to the problem.

Certifying VV to the NRC in 1979
(Report at ¶¶233-37)

2287. On August 3, 1979 Gary Miller, the TMI Station Manager, certified to Paul Collins, Chief of the NRC Operator Licensing Branch, that VV had satisfactorily completed the 1978-79 requalification program. TMIA Ex. 74. This certification is the center of an important issue as to whether Mr. Miller had certified VV to the NRC for license renewal knowing that O's improper assistance contributed to the completion of the requalification program by VV. We conclude below that he did and that there is reasonable cause to inquire further whether Mr. Miller, thus the Licensee, has made a false material statement in connection with the recertification of VV.

2288. The episode must be viewed against the background of the Commission operator's license regulations and the NRC-imposed administrative procedure for operator requalification. The Introduction to Appendix A to 10 CFR Part 55, Requalification Programs for Licensed Operators of Production and Utilization Facilities, provides in pertinent part:

. . . Section 55.33 of 10 CFR requires that each licensed individual demonstrate his continued competence every two years in order for his license to be renewed. Competence may be demonstrated, in lieu of reexamination, by satisfactory completion of a requalification program which has been reviewed and approved by the Commission.

2289. Appendix A to Part 55 also contains the details of the Requalification Program Requirements which, in pertinent part, include:

4. *Evaluation.* The requalification program shall include:
 - a. Annual written examinations which determine areas in which retraining is needed to upgrade licensed operator and senior operator knowledge.
 - b. Written examinations which determine licensed operator's and senior operators' knowledge of subjects covered in the requalification program and provide a basis for evaluating their knowledge of abnormal and emergency procedures.
 - c. Systematic observation and evaluation of the performance and competency of licensed operators and senior operators by supervisors and/or training staff members. . . .
 - d. Simulation of emergency or abnormal conditions that may be accomplished by using the control panel of the facility involved or by using a simulator. . . .

e. Provisions for each licensed operator and senior operator to participate in an accelerated requalification program where performance evaluations conducted pursuant to paragraphs 4a through 4d clearly indicate the need.

2290. To comply with Part 55 (and Part 50), Licensee has its Administrative Procedure (AP) #1006, Operator Requalification Program. TMIA Ex. 65. AP #1006 tracks Appendix A to Part 55 very closely, and is not, as might be inferred from Licensee's Proposed Findings, a voluntary company program.

2291. Section 2.4 of AP #1006 provides for an annual written evaluation examination. It also calls for an annual oral evaluation, not relevant to the issue now before us.²⁴⁵ The written examination simulates the normal NRC examination, and the results are used to identify specific Fundamentals and System Review (FSR) Program topics to be covered by the licensed operator during the subsequent annual requalification cycle. TMIA Ex. 65, at 10.0-11.0. If the operator scores less than 80% on any section of the annual written examinations, he is required to attend the respective FSR program. *Id.* at 12.0. In addition, if he scores below 80% in two or more sections in the annual written examinations he must be given an oral examination and evaluation by a qualified person.

2292. VV took the 1977/1978 written requalification examination in March 1978 and received less than 80% in:

- Section A: Principles of Reactor Theory
- Section E: Safety and Emergency Systems
- Section G: Radiation Control
- Section H: Fuel Handling and Core Parameters

TMIA Ex. 66, 74. As a result VV was required, or should have been required, to attend FSR lectures and to receive a grade of 80% on each topic. AP #1006, at 7.0, requires that "Performance on FSR assignments will be determined through written evaluation quizzes." TMIA Ex. 65, at 7.0. Moreover the procedure provided then that the quizzes be given, either closed or open book, but ". . . as classroom or on-shift quizzes." *Id.* There is no provision for take-home quizzes in the requalification program.

2293. On July 10, 1979 Mr. Zechman, Supervisor of Training, reviewed with Mr. Miller the status of VV's training deficiencies. TMIA Ex. 66. VV could not attend the FSR lectures in January 1979; he was sent take-home FSR assignment packages covering the four areas of deficiencies, which he didn't return; he

²⁴⁵ The annual oral evaluation examination covers eight areas of plant procedures. TMIA Ex. 65, at 12.0. An unsatisfactory oral evaluation requires a discussion of deficiencies between the operator and a suitably qualified person, and a second oral examination. If the second oral performance is again unsatisfactory the operator is relieved of responsibilities and placed into an accelerated requalification program. *Id.* at 12.0. It should be noted that the procedure does not call for the operator to be assigned to the FSR program for deficiencies on the annual oral evaluation. We make this point to clarify that the questioned quizzes are not a part of the annual requalification oral evaluation, nor does Licensee or Mr. Miller assert that such is the case.

received a second set in March 1979 which were not returned timely. Finally he submitted the completed FSR assignments on July 1 or 2, 1979. But Mr. Zechman noted and reported to Mr. Miller that the answers to Sections A and H were written by someone other than VV. *Id.* That, of course, was O's contribution. Mr. Zechman also informed Mr. Miller that AP #1006 requires *written* quizzes to satisfy the FSR program. *Id.*

2294. Despite the fact that Mr. Zechman knew that the work on Section A, Principles of Reactor Theory, was not all VV's work, and despite the fact that Mr. Miller knew directly from O and VV that O had helped VV on Section A, the Training Department assigned VV a passing score of 89.1% on that section. TMIA Ex. 70. That exact score, 89.1%, is very significant, as will be seen below.

2295. Since even with O's help, VV did not attain 80% on Section H, Fuel Handling and Core Parameters, VV was assigned to the accelerated requalification program on that section, and on Section E. TMIA Ex. 72, 74. An important point to remember is that VV was not assigned to the accelerated requalification program on Section A. Not only does the initial FSR program require that satisfaction of the FSR topics be demonstrated by a written quiz, it requires that the operator be assigned to the accelerated requalification program where the candidate fails to score at least 80% on a given topic in the FSR. TMIA Ex. 65, at 12.0.

2296. On August 3, 1979 Mr. Miller wrote to Mr. Collins of the NRC that on retesting, VV had received 89.1% on Section A, 80.5% on Section G, and, as a result of the accelerated requalification program, a score of 99.8% on the other two sections, E and H. TMIA Ex. 74. These would have been satisfactory scores on all four areas of weakness. The letter did not mention the incident involving O's help to VV. The August 3 letter was, we conclude, a false material statement to the NRC. It was the basis for VV's operator's license renewal.

2297. We have, of course, very carefully considered Mr. Miller's explanation of his August 3 certification to the NRC. He testified before the Special Master and, at the Board's invitation, his legal counsel submitted comments on the Special Master's Report.

2298. First, Mr. Miller makes the general statement that since he, Miller, did not regard VV's use of O's work as "cheating" he did not try to conceal cheating from the NRC.²⁴⁶ *E.g.*, Miller Comments at 10.

2299. Second, Mr. Miller states he knew that Section A had been answered in part by O, but that he, Miller, had told the Training Department to have VV retested on Section A material. Miller Comments at 14. He testified that he had sent a formal memo to the Training Department requiring them to reexamine VV. But since the memo was not produced as evidence, we cannot determine Mr. Miller's specific instructions to the Training Department. Tr. 24,434 (Miller).

²⁴⁶ In addition, neither Mr. Arnold nor Licensee's counsel in their pleadings has acknowledged that VV's conduct constituted cheating. While this is disturbing, it is immaterial to the issue of why Mr. Miller certified a false score to the NRC.

2300. Mr. Miller stated on several occasions that the Training Department orally reexamined VV. Tr. 24,415; 24,419; Tr. 24,434-35. No documentation or corroboration of this fact was ever produced at the hearing. Appendix A to Part 55, Requalification Program Requirements, Item 5, requires that records be kept for a period of two years following the date of the recorded event to document the required participation of the licensed operator. The evidentiary record does not reveal who orally examined VV, or when, or whether the results were given to Mr. Miller orally or in writing. More than two years have passed from the asserted event until the beginning of the hearing, but other documents recording the VV-O episode survived. We would have expected some record of VV's oral examination. It was an important matter.

2301. Mr. Miller stated that, in a memorandum prepared by Mr. Zechman, Supervisor of Training, at Miller's direction, VV was told that he would have to be reexamined on the section that "he had passed" but was in "another's handwriting." Miller, ff. Tr. 24,358, at 2. But the July 11, 1979 memorandum referred to by Mr. Miller does not indicate that VV was to be reexamined orally. To the contrary, Mr. Zechman made a specific request to VV that he, VV, "re-do FSR assignment for Category A" and he attached a copy of that exam for VV's use. Staff Ex. 26, Enclosure 1, at 7. As we noted above, the FSR (Fundamentals and System Review) program requires written evaluation quizzes. TMIA Ex. 65, AP #1006, at 6.²⁴⁷ Moreover, only the day before, Mr. Zechman had informed Mr. Miller that the FSR procedure requires *written* quizzes. TMIA Ex. 66. It would be absurd to infer that VV was again provided his FSR Section A quiz for take-home oral compliance.

2302. Mr. Miller testified further that as a result of the "oral" examination of VV, the Training Department determined that he had adequate knowledge of Section A. Tr. 24,415; 24,419; 24,434-35. At the hearing when VV was examined on the training consequences of having used O's work, he reported only having passed a *proctored* examination, and does not mention the oral exam referred to by Mr. Miller. Tr. 26,641, 26,665.

2303. The Board has read and reread Mr. Miller's testimony and comments to learn how it happened that the August 3 letter to the NRC contained the exact grade of 89.1% on Section A, when he makes no claim that 89.1% was coincidentally the grade received by VV on his "oral" examination. To this day neither Mr. Miller, his counsel, nor Licensee has directly commented upon the false statement to the NRC that VV had attained 89.1% on Section A. The matter remains unexplained. It is not disputed by Mr. Miller or Licensee that the only source for the 89.1% score was the grade given on work submitted by VV with O's input.

²⁴⁷ Here again the episode presents a disturbing aspect of the handling of VV. From Mr. Zechman's memo we infer that VV would again be trusted to requalify on Section A by another unauthorized take-home exam.

2304. Mr. Miller now states, through counsel, that the August 3 letter was not accurate and that, in retrospect, it should not have “suggested” that VV had passed Section 4. Comments at 14-15. The August 3 letter did not “suggest” that VV had passed with 89.1%; the letter stated in definite language that he had attained that score. See TMIA Ex. 74. Moreover, the statement by Mr. Miller’s counsel (Comments at 13) that the sole purpose of the August 3 letter was to certify that VV attained a satisfactory rating on his accelerated retraining tests (only Sections E and H) is simply not in accord with the express language of the letter. Furthermore, if that had been the sole purpose of the letter, it would then not account for the two other Section weaknesses in VV’s FSR reexaminations. That therefore would be a false certification as to his complete requalification.

2305. There is no doubt that Mr. Miller and other officials knew that VV’s use of O’s work was a matter of material relevance to his requalification and license renewal. On July 3, 1979, the day after VV’s FSR exams were received by the Training Department, Mr. Miller sent a confidential memo to Mr. John Herbein, Met Ed Vice President. Mr. Miller noted that VV had submitted work not in his handwriting on the FSR quizzes and reported that “There will be problems”, but “we need his license” and “If the exam which is not in proper hand script develops to a problem I will have an additional problem and will get to you.” TMIA Ex. 62. Mr. Miller again reported to Mr. Herbein on July 27, 1979 that the “handwriting on two of the examinations did not appear to be [VV’s].” TMIA Ex. 71. Before Mr. Miller sent the August 3, 1979 letter to the NRC certifying VV with a score of 89.1% on Section A, a draft of the letter was circulated to everyone on the distribution list, including Mr. Herbein. According to Mr. Miller, these persons were specifically aware of the facts and did not disagree with the content of the letter. Tr. 24,440 (Miller); TMIA Ex. 73, 74.

2306. From the foregoing evidence the Board concludes that Mr. Miller, with Mr. Herbein’s knowledge and assent, falsely certified to the NRC that VV had attained a score of 89.1% on Section A, Principles of Reactor Theory, when in fact each of them knew that VV had not attained that score. This was a material certification upon which the NRC acted in renewing VV’s operator’s license.

2307. In addition there were other aspects of the August 3, 1979 certification which raise questions about how accurate and complete Mr. Miller’s representations were. Putting aside for the moment the ethical considerations raised by O’s assistance to VV, the certification letter did not reveal the fact that, contrary to the requirement of AP #1006, VV had not been assigned to the accelerated requalification program on Section A. TMIA Ex. 65, at 12.0. His test results on Section A of the FSR, considering O’s help, should have been deemed a failure requiring accelerated requalification training. Nor did the letter reveal that the scores on Sections A and H were achieved on take-home quizzes, also contrary to AP #1006 requirements. *Id.* at 7.0.

2308. The NRC Staff takes a surprisingly mild position on the August 1979 certification issue. First they assert that VV should not have been certified because, under 10 CFR 55.10(a)(6), part of the certification is that the applicant for whom the license is sought has a need for the license in the performance of his duties. In that Staff believes that Licensee planned to relieve VV of his licensed duties at the time the certification was made, Staff's position is that he should not have been certified on that account. Staff Proposed Finding ¶154. We agree with Licensee's point that at the time it was prudent to maintain extra licensed personnel to account for attrition and illnesses and that Licensee's intent then was to remove VV from supervisory, not licensed duties. Licensee Proposed Finding ¶317.

2309. The second point made by the Staff is that, according to Staff, while Licensee was not required to bring the VV-O incident to the NRC's attention, information on the cheating incident might have been helpful. Staff Proposed Finding ¶154, *citing* Crocker at Tr. 25,102. For only these two identified reasons, Staff states that Licensee was in error to certify VV for license renewal. The Staff makes no recommendations as a consequence of that certification incident. More importantly, at no place in the Staff's testimony or in the proposed findings and comments before us does the Staff discuss the untrue representation in the August 3, 1979 letter to Mr. Collins. We do not understand this silence.

2310. We now come to the question of remedy and jurisdiction. The episode itself has an indirect relevance to our jurisdiction in the proceeding. It does not relate to the April 1981 NRC exams which caused the evidentiary record to be reopened, but it relates to the competence of Licensee's management, Licensee's certification procedures, and Licensee's policies to deter cheating. The latter are within our jurisdiction.

2311. However, the remedies we propose will require continued Staff activity and Commission attention after jurisdiction passes from this Board. We probably do not have the jurisdiction to enforce all of the remedies except for one specific condition we impose below. *Carolina Power and Light Company* (Shearon Harris, Units 1, 2, 3, and 4), CLI-80-12, 11 NRC 514 (1980). Therefore we approach the matter by making recommendations rather than ordering relief.

2312. We recommend that the Commission direct the Staff to conduct an investigation into the circumstances surrounding the August 3, 1979 certification. The Commission should satisfy itself that this will be an aggressive investigation. Office of Inspection and Enforcement did not pursue this matter, but we recognize that it would have been very difficult, probably even inappropriate for OIE to investigate the episode during the pendency of the reopened adjudicative proceeding. We are somewhat disconcerted however, because no component of the NRC Staff protested in this proceeding the false information in the certification to the NRC Operator Licensing Branch. Perhaps the Office of Inspector and Auditor should be enlisted to participate in any such investigation.

2313. The investigation should inquire into all of the uncertainties mentioned in the foregoing discussion of the certification for VV's renewal. In particular the investigation should develop all aspects of Mr. Miller's representation that VV was certified based upon an oral examination by the Training Department. All concerned should be reinterviewed, including VV, the persons who administered the test, and Mr. Miller. Records of any such oral testing should be produced, or the absence of such records ascertained and explained. The investigation should disclose VV's response to Mr. Zechman's memo of July 11, 1979 assigning him to "re-do FSR assignment for Category A". What did VV do with the exam Mr. Zechman attached to his memo for VV's use?

2314. All of the persons who were consulted in advance by Mr. Miller about this August 3 letter should be interviewed. These appear to be Messrs. Beers, Herbein, Lawyer, VV, and Zechman. TMIA Ex. 74; Tr. 24,440 (Miller). A determination should be made whether there was agreement among some or all of them to represent knowingly to the NRC that VV had attained an 89.1% score on Section A, or to make any other inaccurate representation to the NRC. The investigation should also reveal whether the Licensee has taken or intends to take any additional personnel action as a result of the certification incident, and a full statement as to Licensee's position of the entire matter should be reported.

2315. Intervenor TMIA urges the Board to find that all of the individuals who were involved in approving the August 1979 letter to the NRC should be found to be incompetent and that we should recommend that each be referred by the Commission for criminal prosecution. TMIA Comments at 6, 7. Judge Milhollin made no final conclusion or recommendation with respect to the certification of VV's renewal application.

2316. We can make no recommendation about the broader implications of the recommended investigation because we cannot predict its results. Mr. Herbein is no longer employed by GPU Nuclear and is beyond our jurisdiction. Messrs. Zechman, Beers and Lawyer are involved only to the extent that Mr. Miller states that they knew and approved of his action (Tr. 24,440 (Miller)), and of course, these individuals have not been given any opportunity to explain their role. Mr. Miller is indirectly connected to our jurisdiction because as Director of Start-up and Testing for GPU Nuclear, he presumably would participate in any restart of TMI-1.

2317. In the August 27, 1981 Partial Initial Decision on Management Issues, the Board noted that Mr. Miller (and Mr. Herbein) were the focus of various inquiries into alleged failures to disclose information following the TMI-2 accident. We made no findings then, but we explained that one of the reasons that we had not conducted our own inquiry into the information-flow allegations is because ". . . it appears to us that Mr. Miller is now in more of a support role rather than a role involving direct decision-making of line operating authority over the operation of TMI-1." 14 NRC at 545. We noted also that he would be connected only

temporarily to any restart of Unit 1 when Licensee would be focusing all of its official and technical talent on the safe operation of the Unit. *Id.* Finally we noted that no questions had been raised about Mr. Miller's technical competence in our main proceeding and in connection with the information flow investigations. *Id.*

2318. Now we believe that the evidence produced in the reopened proceeding raises questions about Mr. Miller's ethical judgment and that we must address the matter. We make no finding against Mr. Miller directly. He should be given the opportunity to explain the questions raised by the Board during any investigation and in any forum that the Commission should determine to be appropriate. Our findings with respect to Mr. Miller are findings against only the Licensee as a party to this proceeding.

2319. Pending further resolution of the matter, the Board, within its jurisdiction, imposes an additional condition for the restart of TMI-1. In the interest of safety, we would not deprive Licensee of any available talent, including Mr. Miller's, in the start-up and testing of TMI-1. However, in view of our findings concerning his ethical judgment, we condition any restart of TMI-1 with the requirement that any participation by Mr. Miller in the start-up, testing or operation of Unit 1 must be under the direct supervision of an appropriately qualified Licensee official. We also direct the Licensee to preserve all records pertaining to the investigation recommended by the Board until further order of this Board, the Appeal Board, or the Commission.

2320. We conclude this discussion of the VV-O episode with the observation that the matter was first brought to the attention of the NRC at the instance of GPU Nuclear President Robert Arnold. We have found no evidence that there was any improper conduct at any level higher than Mr. Herbein's level. We also note that VV's Unit 1 license was voided some time ago; that Licensee does not plan to recertify VV for Unit 2 licensing, and that at no time relevant to this proceeding has VV been a member of the operations staff of Unit 1 or in a line of authority with respect to Unit 1. *See, e.g.*, Licensee Proposed Finding ¶320.

D. The Licensee's Training and Testing Program (Report at ¶¶238-51)

2321. In the main proceeding the Board heard extensive evidence on the Licensee's training and testing program. *See* August 27 PID, 14 NRC at 441-78; Report at ¶¶238-39. Testing procedures were at issue and were especially the subject of certain contentions raised by Intervenor Aamodt. *See* for example August 27 PID, 14 NRC at 446-52, 460-64, 470-71. In addition the validity of certain of Licensee's testing procedures was the subject of questioning by the Board as we discuss below. On the basis of evidence presented by members of Licensee's management, Licensee's consultants, and the NRC Staff, we found that the Operator Accelerated Retraining Program had served adequately as an

independent training and testing function, satisfying the requirement of Commission Order item 1(e) and that the Licensee had satisfied the requirements and retesting which the Commission had set down in its Orders of August 9, 1979 and March 6, 1980. August 27 PID, 14 NRC at 473-74, 478-79. In reaching this finding we also relied on the adequacy of the NRC operator examination as a final, independent, and accurate measure of the capability of an operator and a measure, in turn, of the quality of Licensee's training program. *Id.* at 454-55, 476-78.

2322. The disclosure of cheating on the April 1981 NRC examinations led us to retain jurisdiction to consider further the effect of the cheating investigation on portions of our August 27 PID, among them, the Licensee's training and testing program. *Id.* at 403.

2323. The validity of certain of Licensee's testing procedures was questioned by the NRC Staff in late 1980. On December 1, 1980, Paul Collins, Chief, Operator Licensing Branch, notified Mr. Hukill of deficiencies in Licensee's licensed operator qualification and requalification training program. Among specific deficiencies cited was inappropriate utilization of open-book quizzes, and the Board was particularly interested in whether this deficiency had been corrected. Tr. 12,599 (Little); *see also* Tr. 12,598-99 (Little, Gardner, Long) and Tr. 12,608-10 (Little, Kelly). On February 13, 1981, Dr. Robert Long, then Director of Training and Education of GPU's Nuclear Assurance Division located in Parsippany, reported to the Board that the deficiency in test administration had been corrected by changes in the relevant plant procedure:

DR. LITTLE: Maybe Mr. Blake is going to address this, but I would like to have someone address the question I raised yesterday about the open-book examination, and whether that had been taken care of.

CHAIRMAN SMITH: Are you going to do it now?

DR. LONG: Yes, sir.

The question you asked was about the December 1 letter from Mr. Collins of the NRC to Mr. Hukill. That was a letter commenting on the revised licensed operator qualification and requalification training program which had been submitted to the Commission for their approval. One of the concerns was that in that procedure, which is a plant procedure 1006, as submitted to the Commission allowed for — the wording specifically was "The quizzes may be administered in either the closed-book or open-book format."

The Commission directed us that open-book was not satisfactory. The procedure has been changed. I believe the letter is going in today. It was due around February 15. The procedure now reads: "The quizzes shall be administered in the closed-book format."

DR. LITTLE: Thank you.

Tr. 12,740. Evidently, actual implementation of the revised procedure was less than adequate as late as July 1981. Report at ¶1250. The correction consisted of the

changed language in Administrative Procedure (AP) 1006 and a notation on the front sheet of the test that it was to be taken “closed-book”. In fact, the cheating incident and the reopened proceeding flowing from it appear to have been the first stimulus sufficient to cause Licensee to pull back the “paper curtain” and actually view its training and testing program at its point of delivery.

2324. Licensee now admits that its past training administrative practices were very loose, especially insofar as administration of quizzes during the regular cyclical training program for licensed operators. It was not clear to the operators that cooperation on quizzes was not acceptable. No specific instruction not to cheat was given. The use of unproctored, take-home exams permitted cooperation. Sometimes instructions were unclear as to whether quizzes were to be open or closed book. Some quizzes actually were answered as a group effort in that the crew concept was encouraged. Licensee Proposed Findings ¶¶220-333; Comment ¶130. We adopt wholeheartedly Licensee’s Proposed Finding ¶333: “Overall, it is clear that Licensee did not give sufficient attention to preserving the integrity of its training and testing program.” *See also* Licensee Reply Finding ¶17.

2325. Licensee not only admitted, but emphasized, its failure to identify this area of weakness in its training program. Licensee Proposed Findings ¶231-240, 326-28. However, going a step beyond *mea culpa*, the Licensee then takes what the Board considers a perilous position, that the “Licensee never stated, nor intended to suggest to the Board . . . that prior to the discovery of cheating on the NRC examinations, consideration had been given to establishing procedures against cheating on examinations,” and consequently, “It is not reasonable to attribute to Licensee’s efforts [on training and testing] in these regards, as the Special Master does, an unfulfilled promise to establish testing administrative procedures.” Licensee Comment ¶130. Not only does the Special Master regard the testing deficiencies as an unfulfilled promise to establish testing administrative procedures, so does the Board, particularly in view of the assurances we received earlier. *See for example*, Tr. 12,598-99; 12,740. The assurances of testing integrity were implicit, if not explicit. Further, we were under the distinct impression that administrative procedures for testing were not only to be devised but to be implemented, based on the presentations made by Licensee’s management. On the basis of Licensee’s Comment ¶130 the Board is forced to conclude that we did not see what we thought we were seeing, and that Licensee’s training and testing program was best described as the opposite of *esse quam videri* (to be, rather than to seem).

2326. Licensee’s narrow interpretation of what it actually promised to do in regard to testing raises questions as to how far Licensing Boards must go in eliciting information from witnesses. Surely after being told that the examinations were closed-book, the Board should not have had to lower the level of the proceeding and embark, *sua sponte*, on a question-path such as “Does this mean the tests were proctored? Was the proctor actually proctoring or just present? Did

'closed-book' mean exactly that and there was no prohibition against oral cooperation?" Or should we have declined to accept the testimony of the Director of Training that examinations were given under appropriate conditions until he proved that he knew in fact that this was the case? If this is the pattern which must be followed, licensing proceedings will go on *ad infinitum*. If the Licensee relies on Licensing Board proceedings to ferret out deficiencies at this level of detail, there is indeed a serious void in the licensing process.

2327. Furthermore, Licensee has a self-interest in the first instance to assure that the operators entrusted with sophisticated and costly nuclear power plant investment are adequately qualified to do so and to realize that the operator's passing the NRC exam on one or two occasions is only a minimum requirement, not a guarantee of continued satisfactory performance. If the Licensee does not itself exercise the requisite quality control, quality assurance and feed-back mechanisms to assure high-quality training and testing, it is beyond the power of regulators and regulations to put an appropriate program in place.

2328. In its proposed findings Licensee has accurately captured our view of the most critical aspects of the cheating issue. We adopt Licensee's Proposed Findings ¶¶230-31, 235 in part or *in toto*, below.

While we are satisfied that Licensee management did not directly know of or encourage cheating, nor were they involved in any manner in the cheating incidents . . . , the question of management's negligent failure to prevent this misconduct is a much more difficult question to resolve. . . . there were serious shortcomings in Licensee's administrative practices. we have made an effort to understand whether management held an attitude about integrity on the job, or about getting something done at whatever cost — *e.g.*, exams — which could have played a part in the cheating which has occurred.

We consider the matter of management attitude and ethics perhaps to be of the most vital importance in our resolution of the facts of this case. As we stated in the PID, in considering whether Licensee's organization is qualified to operate TMI-1, the attitude of management towards the responsibility which would be entrusted to it was of major concern to us. [14 NRC at 428-32.] With respect to exam cheating, we have no doubt that specific procedures can be written and instituted at TMI-1 to minimize the likelihood of any such incidents in the future. [Citation omitted.] This is a fairly easy task to perform and to evaluate. More difficult to assess is whether management has a properly serious attitude about the subject, has inculcated its staff with a fundamental understanding of its responsibilities in this regard, and has established adequate lines of communication with its staff members to "reach" them on this subject. Generally, then, we have considered whether Licensee's management has provided us with not only direct assurances, but with more subtle indications of its ability to properly

manage a nuclear power plant. In making our evaluation, we take into consideration the Special Master's impressions of the witnesses, as well as Licensee management's written and oral testimony, the Staff's views on this subject, and the opinions of Licensee's employees, particularly its operators.

. . . [I]n retrospect, Mr. Arnold recognizes that management's failure to explicitly enunciate its policy on cheating or to establish and enforce the necessary safeguards, [citation omitted], were important deficiencies, given the consequences of this failure. Tr. 23,630-34 (Arnold). Mr. Arnold attributes these deficiencies to the trust management placed in the TMI-1 operators and the consequent failure to adequately acknowledge that when you take any group of individuals in the aggregate you have got to expect there are going to be some occasions of falling short. Thus, management failed to be sufficiently sensitive to the need to express the trust that it placed in its operators, and to safeguard that trust. Tr. 23,632-33 (Arnold). In addition, with the complete restructuring of the training program and department following the TMI-2 accident, management's major focus was on the quality and scope of training. Instituting exam procedures was simply overlooked. Tr. 23,633 (Arnold); *see also* Long, ff. Tr. 24,921, at 3.

2329. In the reopened proceeding, issue 9 concerned:

The adequacy of Licensee's plans for improving the administration of future Licensee qualification examinations for licensed operators and candidates for operator licenses, including the need for independent administration and grading of such examinations.

2330. The Licensee has implemented a procedure applicable to the administration of all examinations by the Licensee or its contractors which provides for: (1) security against advanced leaking of the questions; (2) a clear indication of the ground rules for the exam, *e.g.*, open- or closed-book and a certification by the student that the work is his own; (3) procedure to avoid crib materials, to avoid close seating and for recording seating charts for major exams; (4) tests to be 100% proctored; (5) rules for leaving the examination room and; (6) reporting of student misconduct to appropriate authority. Long, ff. Tr. 24,921, at 25-26. *See also* Report at ¶250; Licensee Proposed Findings ¶¶347-49.

2331. While these procedures are appropriate, and should at least make cheating very difficult, the Board believes that Licensee has overlooked an additional and desirable safeguard against undetected cheating. Depending upon the examination and its importance, the Training Department should review a significant sampling of the examination answers for unexplained parallelisms. The NRC Staff has added such a step to its licensing procedures. ¶2361, *infra*. Therefore we will require as a part of our finding that the Licensee's examination procedures are now

adequate, a step which requires a sampling of examination answers for evidence of cheating, using a review process approved by the NRC Staff.

2332. As does the Special Master, we view these new procedures with Licensee's past record in mind. Report at ¶250. Licensee's view, on the other hand, is that Licensee has fully learned its lesson and that the procedures which have been instituted will be fully complied with by the training staff. Licensee Proposed Finding ¶349. Further, Licensee's view is that it is neither necessary nor desirable to utilize independent consultants to conduct qualification exams at TMI-1, either as a substantive check on training or as an administrative check on adequacy of Licensee's testing procedures. Licensee's Proposed Finding ¶351. Licensee advocates reliance on its improved administrative process, its instructors, and finally on the NRC exam for valid verification of operator qualifications. Licensee Proposed Findings ¶¶353-54. Reliance on instructors leads us to the questions of quality assurance and quality control over the delivery of instruction at TMI-1.

2333. We fully recognize that quality of instruction was not directly an issue in the reopened proceeding, and consequently, that we have preserved limited jurisdiction in this area. Both Licensee and Staff challenge the emphasis given by the Special Master to this topic. Licensee's Comments ¶¶132-33; Staff Comments ¶¶8-13. *See also* Tr. 24,750-52.

2334. As pointed out by the Special Master (Report at ¶242), because memorization was an issue with respect to cheating there was considerable evidence on the method of instruction used in the Licensee's training program. Consequently, going beyond test administration and certification procedures, the Special Master found that the Licensee's training program was "weak in content and ineffective in its method of instruction." Our examination of the course *content* indicates to us that it is in compliance with 10 CFR 55. On the other hand, we agree with the Special Master that evidence presented in the reopened proceeding raises doubts about the *quality of instruction* (including delivery of instructional material, composition of examinations, and grading). Report at ¶¶242-51. Licensee does not admit deficiency in this area, with the exception of the Category T examination series discussed below.

2335. We begin our discussion of the quality of instruction at TMI with two observations:

- (1) To date, Licensee's candidate performance level on the NRC operator licensing examinations has been satisfactory to the NRC Staff. Boger, ff. Tr. 25,480, at 2-3. Consequently, the Staff was, and is now, satisfied with the adequacy of Licensee's training program. Staff Proposed Findings ¶¶157-160; Staff Comment ¶12.
- (2) This Board has previously reviewed and found adequate the training and testing program at TMI-1. 14 NRC 381 (1981), ¶165. We based this finding in large part on course outlines, Staff testimony, and opinions of expert witnesses who professed their knowledge of the Licensee's

training program. *Id.* We specifically found that successful completion of the NRC examinations, coupled with training to allow success on those examinations, was indicative of a capable licensed operator. *Id.* at ¶272.

2336. Based on the post-TMI-2 attention given to training one would anticipate a model program at TMI-1. Licensee has indicated that one of the reasons that it overlooked instituting exam procedures was because “with the complete restructuring of the training program and department following the TMI-2 accident, management’s major focus was on the quality and scope of training” involving “major organizational and staffing changes” and “development of completely new programs for new and requalifying ROs and SROs.” Licensee Proposed Findings ¶¶235, 326-27. GPU Nuclear’s former Director of the Training and Education Department, Dr. Long, testified as to the adequacy of the methods of instruction. Licensee Proposed Finding ¶335.

2337. However, the record of the reopened proceeding has provided several indications of weakness in the quality of the instruction at TMI-1, such that we no longer have the assurance that there was sufficient quality control over the training and testing process. As noted below, however, we do not find that there was a failure of instruction — only that there were significant weaknesses which should be examined and their correction assured. The evidence suggests that the operators had reason to lack confidence in their preparation for the NRC examination because of confusion by instructors, as well as operators, as to what test answers were correct and/or acceptable (correct and acceptable were not necessarily synonymous). *See, for example*, Tr. 24,757; 24,766; 24,773-77; 24-782-85; 24,788-90 (Brown).

2338. Professor Trunk noticed inconsistency in grading on Licensee-administered tests, not only from test to test but within an individual’s test session, leading to confusion by operators as to whether a given answer was acceptable or not. Tr. 24,516 (Wilson). Inconsistency in grading and lack of clarity as to answers expected is highlighted in the Special Master’s examination of Nelson Brown, Supervisor, Licensed Operator Training at TMI-1, explaining how the Category T makeup examination taken by Mr. Ross and graded by Mr. Boltz was regraded by Mr. Brown, resulting in a change of score from 76.6 to 90.7. We will not repeat the convoluted rationale given by Mr. Brown for the changes; the answers given on redirect and cross-examination defy summarization. Tr. 24,660-75 (Brown, Milhollin); Tr. 24,773-77 (Brown, Blake). For specific examples, see Tr. 24,661-63 (Brown on acceptability of the answers “absorption of H₂” and “RC Coolant” to a question about how hydrogen is removed from the reactor building); Tr. 24,663-68 (Brown regarding acceptable answers to a question on “lessons learned” and the dependence of the answers on the opinion of the grader, *e.g.*, Brown, Boltz, or a contractor); Tr. 24,757-58 (regarding Brown’s change in opinion about answers to

this same question); and Tr. 24,776-77 (Brown explains how grading should be consistent with what was taught in the classroom).

2339. Since nuclear reactors are inanimate objects which operate according to natural laws, it would seem to follow that composing objective and unambiguous examination questions would be a relatively straightforward task in the hands of a competent instructor. For example, the natural laws governing pressure, volume, and temperature relationships in fluids are well-established, and further, for a given fluid, they operate without any known exceptions. Whether or not an instructor wants or "is looking for" a given answer is irrelevant; the relevant point is that training, and the testing which measures the training, must comport with reality.²⁴⁸

2340. One of the responsibilities of an instructor is to impress on the students the significance of important concepts and to test them in a manner which will indicate whether they have fully understood these concepts. Licensee does admit to shortcomings in these areas in relation to the Category T tests, the special audit examinations covering lessons learned from the TMI-2 accident. See August 14 PID, 14 NRC 454-55. Accordingly, we adopt verbatim (with citations omitted) Licensee's Proposed Findings ¶¶343-45, which detail serious criticisms of the administration of these tests:

The first two rounds of Category T makeup tests included questions which are both identical and substantially similar. . . . In addition, the control room staff apparently were not aware of the significance of the Category T section, which was, during the first round of the make-up quizzes, administered simply as a portion of a weekly quiz. . . . Thus, four operators failed Category T three times. . . . Moreover, round 2 of the Category T was given as a nonproctored, closed book, take-home test. . . .

We were somewhat relieved to hear from Mr. Newton that when he realized that some operators were not grasping the Category T subject matter or placing sufficient importance on it, he required in July, 1981, that the test be formally administered and that the content of the test be substantially changed. . . . In addition, a fourth Category T makeup quiz was administered in November, 1981, after the discovery of cheating on the April, 1981 NRC examinations and the concerns about collusion on the Category T makeup tests were raised through Mr. Trunk's investigations.

. . .

The fourth Category T quiz was taken by all operators who did not pass the Category T portion of the Kelly exam, or who did not take the Kelly

²⁴⁸ We are reminded here of T. H. Huxley's comments on the rules of the game: "The chess-board is the world, the pieces are the phenomena of the universe, the rules of the game are what we call the laws of Nature. The player on the other side is hidden from us. We know that his play is always fair, just, and patient. But also we know, to our cost, that he never overlooks a mistake, or makes the smallest allowance for ignorance." *Lay Sermons*.

exam. . . . The fourth makeup was preceded by a fairly short, but comprehensive review session. . . . From our review of the examination (along with the fifth makeup test administered to the one individual who failed to achieve 90 percent on the fourth makeup), as well as our understanding that Licensee's new exam administrative procedures were utilized and that the Staff approved of the exam, we are satisfied that the operators were sufficiently tested on this subject matter, given the thorough and conceptual nature of the test. . . . Nevertheless, we find it highly inappropriate that Licensee waited until such a late juncture — at least until July, 1981, and not until November, 1981 for many of the operators — to properly test operators on this material. Moreover, the repetition on the first two makeup tests of what appear to be less important Category T-related issues . . . , most assuredly encourages memorization, rather than understanding, of the subject matter. It also results in individuals focusing on passing the exam, rather than increasing their grasp of the subject matter, *i.e.*, coaching.

2341. Licensee's candid admission of the shortcomings on the Category T examination has been reassuring. Even without these admissions, however, the Board would be forced to the conclusion that the reopened proceeding demonstrated areas of significant weakness in the quality of instruction. The reach of this finding should be well understood however. There has been no systematic evaluation of the instructors' qualifications nor their methods. We have been reassured by, among other things, the fact that the operators as a group fared well on the October 1981 NRC examination. Moreover, the value of the instructors' command of the technical subject matter and their innate abilities to impart that knowledge on a one on one basis has not been examined. We do not find therefore that there has been a failure of instruction; only that weaknesses have been identified which should be pursued.

2342. Licensee asserts that the Special Master failed to consider a great deal of evidence in his analysis of Licensee's training program, including the opinions of Dr. Long, Mr. Newton, and Mr. Boger. Licensee Comment ¶145. The Board stresses that it did not rely primarily on the Special Master's Report in reaching its conclusions on the quality of instruction at TMI-1. As we indicated above we relied on the evidence of record relevant to the actual point of delivery, specifically the testimony of the instructors and examinees and the examination papers in evidence. With such first hand evidence the Board was able to reach its own conclusions without relying solely on the opinions of others.

2343. Licensee's stance is that the instruction has improved and that, anyway, *most* of the operators believe the training program is acceptable. Licensee Proposed Findings ¶¶339-41. We hold that another criterion is the relevant one — is the instruction adequate to prepare the operators to operate the plant safely?

2344. To answer this affirmatively, as required by the Commission's original order in this case, we find it necessary to impose remedies to provide the requisite "Quality assurance", as detailed below.

2345. These remedies are directed toward the Licensee which has the first responsibility for assuring operator competence. Licensee believes that "it is the Staff's intention to have periodic NRC requalifying exams when the staffing resources of the Operator Licensing Branch of NRR so allows." Licensee Proposed Finding ¶354. However the Staff in plain language has put the Board and the parties on notice that its role in auditing operator training and testing will not go beyond the usual regulatory requirements (*see* 10 CFR 55.20 and Appendix A(5) to Part 55), *i.e.*, auditability of the Licensee's requalification program and the administration of the NRC examination:

The Staff has not reviewed the Licensee's plans for improving the administration of its future qualification examinations, nor has it required such plans to be submitted. It does not plan to evaluate the Licensee's future qualification plans. However, the Staff will evaluate the performance level of license candidates on NRC examinations. As in the past, the NRC will withdraw its acceptance of facility certification of candidates if the performance level is not satisfactory. In order to determine whether the performance level is satisfactory, the Staff compares the latest performance of the Licensee's candidates with the perceived industry norm and with their previous record to determine if the certification process effectiveness has changed. It should be noted that, to date, the Licensee's candidate performance level has been satisfactory to NRC. Boger, ff. Tr. 25,480, at 2-3.

Staff Proposed Finding ¶159.

2346. The Board does not fully understand the Staff's position. Part 55 requires more than NRC licensing examinations to assure that operators are competent. Applications for initial licenses and for license renewal both require a representation that the candidate has been successfully trained by the utility and has already learned to operate the controls in a competent and safe manner. 10 CFR 55.10(a)(6); 55.33(4); and Appendix A. Thus, as in many areas of nuclear safety, the regulatory scheme requires redundancy in safety. In this instance, both reliable utility training and testing and NRC examinations are expected to assure operator competence. Without periodic actual auditing of the Licensee's training and examination program, we cannot determine how the NRC Staff can be assured that the Licensee has met its training and testing obligations.

2347. We now set forth our remedies. The Special Master reached the conclusion that the Licensee's training program was an inadequate response to the Commission's Order of August 9, 1979. Report at ¶251. Should we find the program totally inadequate based on what we now know about the way it was administered, our remedies could include setting conditions which must be satis-

fied before restart. The extreme remedy, short of denying restart, would be a complete revamping of the training and testing program under the direct supervision of NRC Staff members who are capable of providing constructive criticism of the program, to be followed by retraining and retesting of the operators. On the other hand, we believe that the TMI-1 operators have already been exercised in too many tests because of factors beyond their control, *i.e.*, inept test administration by both Licensee management and the NRC license examiners. Regardless of the past history of training and testing at TMI-1, we are charged with assuring that operation of this plant is not inimical to the public health and safety. Consequently we impose the following conditions on TMI-1 to be satisfied within the first two years after any restart authorization:

- (1) There shall be a two-year probationary period during which the Licensee's qualification and requalification testing and training program shall be subjected to an in-depth audit by independent auditors, approved by the Director of NRR, such auditors to have had no role in the TMI-1 restart proceedings.
- (2) Licensee shall establish criteria for qualifications of training instructors to ensure a high level of competence in instruction, including knowledge of subjects taught, skill in presentation of knowledge, and preparation, administration, and evaluation of examinations.
- (3) Licensee shall develop and implement an internal auditing procedure, based on unscheduled ("surprise") direct observation of the training and testing program at the point of delivery, such audits to be conducted by the Manager of Training and the Supervisor of Operator Training and not delegated.
- (4) Licensee shall develop and implement a procedure for routine sampling and review of examination answers for evidence of cheating, using a review process approved by the NRC Staff.

E. The Licensee's System for Certifying Candidates
(Report at ¶¶252-59)

2348. Issue 12 considered:

The sufficiency of management criteria and procedures for certification of operator license candidates to the NRC with respect to the integrity of such candidates and the sufficiency of the procedures with respect to the competence of such candidates.

2349. Commission regulations, 10 CFR 55.10 and 55.33, require the Licensee's certification of competency of operator candidates seeking to obtain or renew licenses. As of the April 1981 NRC examination, Licensee had no specific written certification procedure but relied on a meeting of management and training personnel during which candidates were evaluated according to performance on

the Associated Technical Training Services (ATTS) requalification examination, during the training program, and on the job. Report at ¶253. The subjective evaluation by Mr. Ross of the operators' integrity and attitude was relied on. Licensee Proposed Finding ¶¶359-62. The candidates themselves were not interviewed. *Id.* The administrative procedures in effect during the ATTS examination were not adequate to prevent or to detect cheating. Report at ¶254. Poor performance on the ATTS examination was not a barrier to certification. *Id.* at ¶255. Evaluation of performance during training rested in turn on the sometimes perfunctory review of quizzes by the instructor. *Id.*

2350. Mr. Hukill admitted that Licensee "can be legitimately criticized for not formalizing our certification process by establishing a written certification procedure" but that he intended to establish such a procedure. Report at ¶258; Licensee Proposed Finding ¶364. The procedure would include signed statements from training personnel that operator candidates had indeed completed their training requirements. Report at ¶258. We believe that, if properly implemented, a formal certification procedure including such signed statements, founded on the trainer's evaluation of candidates by means of properly administered and graded examinations, will enhance the credibility of Licensee's certification process. We note further, our belief that as part of the certification process the senior management official charged with signing the certification to the NRC is obligated to review the candidate's personnel file and to take into consideration any information reflecting on the candidate's integrity and attitude.

2351. Such steps, when implemented, should eliminate the possibility of certifying candidates for the NRC examination who have cheated on internal examinations on one or more occasions. We agree with the Special Master (Report at ¶259) that Licensee had in its possession ample evidence that O and W, particularly O, should not have been certified for the April 1981 NRC examinations. The certification which permitted them to sit for the examinations was another essential link in the chain of events which ultimately resulted in this reopened proceeding. The certification process, therefore, is one of the critical control points for safeguarding the overall integrity of training and testing of the operators of nuclear power plants. In the case of O and W, had the steps we described above been taken this link in the chain of events would have been broken. We doubt whether even the upgraded certification procedures would have avoided the improper certification for VV's license renewal in August 1979 because it was with full knowledge that VV had not properly passed his requalification testing that the TMI station manager certified VV to the NRC. We trust, however, that the VV incident was an anomaly and that the present management of TMI-1 would not condone the procedure involved in that incident.

F. The NRC Examination (Report at ¶¶260-87)

2352. Issue 10 considered:

The adequacy of the administration of NRC licensing examinations for TMI-1 personnel, including proctoring, grading, and safeguarding the integrity of examination materials; the adequacy of the Staff's review of the administration of Licensee's Category T examinations; and the adequacy of the Staff's plan for retesting operators and monitoring its NRC examinations to assure proper adherence to NRC testing requirements in order to assure that the purposes of the NRC examinations, because of the nature of the questions, cannot be defeated by cheating, the use of crib sheets, undue coaching or other evasive devices.

2353. The NRC Staff presented an array of witnesses best qualified to testify about the NRC examinations in issue and the Staff operator licensing procedures. The witnesses from the Operator Licensing Branch of NRR were Paul F. Collins, Chief of the Branch (ff. Tr. 25,109); Bruce A. Wilson, Section Leader, Power and Research Reactor Group (ff. Tr. 25,481); and Bruce A. Boger, reactor engineer (ff. Tr. 25,480).

Proctoring and Grading (Report at ¶¶260-68)

2354. The Special Master concluded that in regard to the April 1981 NRC-administered operator licensing examinations at TMI-1, the Staff was lax and its procedures were inadequate. Report at ¶339. The Staff does not challenge that conclusion (Staff Comment ¶16) nor does any other party. Neither does this Board. Consequently, the Board does not here recite all of the details of the admitted deficiencies which are described at length in the Special Master's Report (at ¶¶260-68) and the proposed findings of the Staff (¶¶163-78) and Licensee (¶¶381-395).

2355. Despite its admission of lax and inadequate test administration of the April 1981 examinations, the Staff would have us find that the administration was in full compliance with the governing standard, Operator Licensing Branch Standard ES-201, paragraph F. Staff Ex. 29, at 3; Staff Proposed Finding ¶163. This standard states:

The examiner should make use of available facilities, in the manner he considers most satisfactory, to ensure the integrity of the examination. Use of facility proctors is permitted when circumstances require but should be avoided if possible. It is desirable that the examiner oversee the examination personally.

The Staff evidently is of the opinion that compliance with this standard could be met by having at least one NRC representative present at all times in the training building while the exams are being conducted. Staff Proposed Finding ¶166.

2356. The Staff points to the need for the examiners to spend time with members of Licensee's staff, *during the course of the written examination* in review of the examination, in compliance with another requirement of ES-201:

At some time during the course of the written examination, the examiner should have a cognizant member of the facility staff review the examination so that any possible inappropriate questions may be discussed, and to ensure that all answers deemed correct are currently valid.

Staff Ex. 29, at 3. Staff's objectives in this review are to ensure that questions are clear, understandable, and germane to the particular facility and to ensure the current validity of the answers on NRC's answer key. *Id.*; Tr. 25,498-99 (Wilson); Staff Proposed Finding ¶167. Staff would also have us find that the Staff's review was in accordance with the applicable procedures. Staff Proposed Finding ¶170. As pointed out by Licensee (Proposed Finding ¶391), the proctoring situation at TMI-1 in April 1981 apparently was typical, except for the unusually large number of examinees. Tr. 25,511 (Wilson). Licensee's consultant, Mr. Kelly, a former NRC examiner, indicated that the Staff considered the proctor's primary function to be answering questions about the exam, rather than safeguarding against cheating. Tr. 24,898-99 (Kelly).

2357. We find that the review engaged in during the April 1981 examinations at TMI-1 was in literal compliance with ES-201. However, we do not believe that it was ever intended that compliance with the review portion of ES-201 would excuse such marginal compliance with the portion cited in ¶2355, *supra*. Only by the most liberal interpretation of this language could the Board find full compliance with ES-201 by the Staff in its safeguarding of the integrity of the April 1981 TMI-1 examinations. We decline to do so; the facts of the matter speak for themselves.

2358. We adopt that portion of Licensee's Proposed Finding ¶392 which states:

Certainly the cheating which took place on the April, 1981 exams at TMI enunciated what should have been apparent to the Staff before; namely, that the risk associated with partial proctoring of examinations upon which the Staff places such significance is too great to ignore.

2359. The newly revised ES-201 (Rev. 3) sets forth proctoring requirements explicitly and, in contrast to the original, leaves little to the discretion of the examiner. Staff Ex. 30, at 15-16. We find that the new examination procedures, which were utilized for the October 1981 examination at TMI-1, should be adequate to safeguard the integrity of the *administration* of the examination, *i.e.*, prevention of cheating. Apart from the administrative aspects, we still have certain reservations, addressed below about the review procedure and its potential for violating the integrity of the grading of the examination. We also have reservations

about whether the repetition of questions from one license exam to another can effectively defeat the purpose (and thereby the integrity and validity) of the NRC operator licensing examinations. These reservations, likewise, are discussed below.

2360. As summarized in the Report at ¶267, the Staff's grading of the April 1981 NRC examinations was at issue, as well. In fact, the cheating by O and W was not discovered by a member of the Staff but by one of its consultants, Mr. Monte Davis. Staff Ex. 24; Collins, ff. Tr. 25,109, at 5. While Mr. Davis found numerous and obvious similarities in the SRO "B" papers of O and W (Staff Ex. 24), Mr. Collins did not detect the same type of similarities when he graded the RO "B" papers, giving as one reason the large number (17) of examinations. Collins, ff. Tr. 25,109, at 5.

2361. New procedures will require a new form of grading to check for copying. Specifically, an NRC reviewer "must review in detail the answers and grades assigned for at least one question in 50% of the categories for 50% of the applicants." Staff Ex. 25; Report at ¶268. We do not know the basis for arriving at this auditing procedure, nor whether it will result in a valid sample. We recommend that the grading process be scrutinized by professionals trained in test design and administration. In the instant proceeding, we find that the new grading procedure was an improvement over the previous grading procedure and that it was adequate for the October 1981 examinations.

2362. Finally, we cannot help but recall the testimony of Staff (and Licensee) witnesses on Aamodt Contention 2 which led us earlier to rule against the Aamodts and in favor of the Staff on the adequacy of the NRC's licensed operator testing. 14 NRC at 476-77. The reopened proceeding afforded insights into the Staff's implementation of 10 CFR Part 55 which lead us now to have certain reservations about licensed operator testing, even in view of the changes which have been made since July 1981. While we recognize that our jurisdiction in this area has passed, we cannot in good conscience dismiss the subject without bringing certain matters to the Commission's attention. We do this in the following section.

Content of the NRC Examination (Report at ¶¶269-81)

2363. In accordance with the Board's ruling, the *substantive* content of the NRC examinations was not an issue in this proceeding:

The Board will not permit a relitigation as to whether the substance of the NRC operators' license examinations are technically adequate to assure that operators are qualified to operate the plant without endangering the health and safety of the public.

Unpublished memorandum and order of October 14, 1981, at 5. The issue to be examined was the *nature* of the questions on the written examination, *i.e.*, whether

they were amenable to cheating or other devices which could defeat the purpose of the examination. Collateral issues related to whether the questions were framed in such a way that they necessitated broad, rather than specific, answers (“broadening the answer keys”), or whether they were so inartfully framed that they undermined the examination’s credibility with the operators. Report at ¶269.

2364. In line with the Board’s ruling, the Staff did not present evidence on the adequacy of the substantive content of the NRC examinations. Staff Comment ¶18. The Staff was justified in not presenting such evidence and incidentally, further justified in its observation that the Special Master had not taken into account in his criticism of the content of the examination the fact that the examination includes not only the written portion but an oral portion more oriented to evaluating problem-solving and analytical ability of the examinee. Staff Comments ¶¶19-20.

2365. In connection with the litigation of the specific issues in this reopened proceeding, NRC written examinations, answer keys, and answers were subjected to intense scrutiny. The Special Master perceived problems with the substance: (1) that keys for answers to questions were conformed to the information taught in training, rather than to the actual plant design, (2) that answer keys sometimes reflected obsolete or incomplete information, and (3) that the questions called for very specific design information which would require extensive memorization of not just factual information but specific phrases. Report at ¶¶270-79.

2366. The portion of the Special Master’s Report on the substantive quality of the NRC examination has gone well beyond the jurisdiction delegated to him and our own jurisdiction. Nevertheless, in reviewing the evidence on which the Special Master relied, the Board is also concerned about the substance of the examinations. The evidence on substance, though uninvited, accompanied the evidence on the *nature* of the examination. It now lies before us and we cannot walk away from it.

2367. Memory plays an important part in passing tests or in operating a nuclear power plant. However there is a difference between questions which challenge the operator’s memory as to how a plant is designed and built and questions which require an exact phrase by phrase answer based on training material. With respect to the twelve questions and answers that were put into the record, the Special Master concluded that the information sought was so detailed that no operator could have supplied it without memorization. Report at ¶278. We are not in a position to judge whether the questions asked for information that was beyond a competent operator’s knowledge; however, it appears that graders expected the answers to correspond very closely to the answer key. It also appears that the wording of the answer was unduly emphasized; that in order to pass the NRC tests the operators had to memorize phrases from procedures or training material.

2368. For example, we are concerned with the grading of Question F.5.c which asked "Under what conditions may HPI be throttled after ESAS initiation during a LOCA?" The answer key properly included the condition ". . . action is necessary to prevent pressurizer from going off scale high." Operators who answered "to prevent RCS from going solid" were marked wrong. This is clearly a case where rote memorization of a procedure is required.

2369. In addition to his own observations on memorization, the Special Master has cited the opinion of a number of operators that word-for-word memorization of procedures was required to pass the exams. Report at ¶278. Many of those operators were of the opinion that the NRC exams were not a fair test of their ability to operate the plant.

2370. In looking for amenability of the examinations to cheating, one cannot fail to see, as well, their substantive content. We tread lightly in this area, however, because (1) we question our jurisdiction on this issue, (2) the parties had no opportunity to address it, and (3) we sense that the problems we glimpse may be generic rather than specific to the TMI-1 examinations.

2371. In its comment at ¶18, n.5, the Staff states:

Additional analysis is being done by the Staff to further ensure, and maintain continual assurance, that the content of the NRC examination is valid. However, the studies that are underway are considering the entire examination process, not just the written examination in isolation. Therefore, the Staff has begun efforts to validate the examination content and process. These studies include a formal content analysis of the written examination questions to identify required cognitive functions and to classify questions by function. The staff is also considering a computer-assisted, automated system for written examination preparation. This system will allow the written examination to include a mix of questions that test for the skills and knowledge that the validity studies show should be included in the written portion of the examination. Other skills and knowledge will be covered in the operational portions, as they are currently.

2372. We strongly recommend that the Commission give high priority to the Staff's efforts to validate the NRC operators' examinations and to provide for whatever oversight is required to establish the credibility of these examinations with the operators who sit for them, the licensees which rely on this examination as the final control point in insuring operator competence, and the public whose health and safety are at risk.

The Review Process (Report at ¶¶276-77, 285-86)

2373. The Special Master was especially concerned with the reliance by the Staff on the Licensee for answers to examination questions and he ultimately

concluded that the degree of reliance was unacceptable and hence the content of the examination was inadequate. Report at ¶285.

2374. Here, his basis for undue reliance is an analysis of the twelve questions previously cited in connection with broadening of the answer keys. Report at ¶270-77. In some instances the NRC examiner framed questions to which he himself did not know the answers. We do not condemn that action entirely. We note however that some questions were not well framed, so that answers not anticipated by the examiner were deemed acceptable. We are particularly concerned with the Special Master's finding that some questions were based on unreliable or non-current information from the Licensee. Report at ¶277. It is by no means apparent that the fault lies entirely with the Licensee, since in some cases the examiner had misinterpreted the information supplied to him. *Id.*

2375. We do not share the Special Master's concern that the questions are too specific to the design of the particular plant. Report at ¶275. The site-specific nature of operator examinations is emphasized in Sections 55.20 through 55.23 of 10 CFR. However, we do agree that "to grade such questions accurately, the NRC examiner must have reliable, specific information about the design, and he must understand that material." It appears to us that the NRC examiners have not become thoroughly familiar with the design and procedures before making out the exam questions. To do so would require a large commitment on the part of the examiners and a considerable increase in Staff personnel. The inadequacies in staffing levels have been admitted by the NRC Staff. Report at ¶286.

2376. The issue of whether the scope of examinations should be broader than set forth in Section 55.20 is beyond our jurisdiction. Since the questions must be site-specific and design related, the examiner must rely to some extent on information provided by the Licensee. The Licensee is in the best position to provide current information reflecting modifications in plant design and operating procedures and to challenge the questions framed by the examiner if they appear to be based on misinterpretation. The crux of the matter is whether the existing examination preparation and review process presents a potential for compromising the independence, integrity, and validity of the NRC examination. The current review procedure does not, as one might reasonably expect, occur *before* the examination is administered, which would allow the examiner to verify any changes to questions or answer keys and to make carefully considered corrections, if necessary. The review process occurs *concurrently* with the exam administration, leading to "fixes" while the examinees are trying to answer the questions. We realize that the April 1981 TMI-1 examinations were unique in that all the TMI-1 operators had to take the exam, leaving no "disinterested" operator to review the examination beforehand. However, the concurrent review process, as outlined in ES-201, is the standard, not the exception. Staff Ex. 29.

2377. We do not have jurisdiction over formulation of generic Staff procedures for administering the examinations. We are obliged to point out to the Commis-

sion, however, the broader implications of the existing review process, as illustrated in this reopened proceeding. To evaluate a licensee's operator qualification program and the competence of the individual operator, the Staff relies primarily on the performance of the operators on the NRC license examination. Boger, ff. Tr. 25,480, at 3. Conversely, a licensee, with some justification, concludes that its operators are competent and its training program is adequate if the overall performance on the examination is satisfactory. See, for example, Licensee's Proposed Finding ¶381 and Staff's Proposed Finding ¶204. In essence, then, the NRC examination is to serve as an independent and external audit of operator competency. In the chain of events stretching from the operator's training to his actual operation of the plant, the NRC examination is the final link and the last control point. This control point affects not only the licensing of those individuals who take the examination, but it operates as a major "feedback control" to the Licensee's training program. Wherever the examination process is neither independent nor external, its audit value is impaired and there is the potential for abuse and for diminished credibility.

G. The NRC Staff's Response to the Cheating (Report at ¶¶288-302)

2378. Issue 2 was:

The adequacy of the Staff's investigation of, and NRC response to, the cheating incident and rumors of cheating in the April 1981 NRC examinations.

2379. The NRC Staff's response consisted of (1) making four investigations, (2) voiding the April 1981 TMI-1 examinations, (3) revising its procedures for proctoring and grading, and (4) administering new examinations under the revised procedures in October 1981. Report at ¶288.

2380. The first investigation was begun by the OIA, but OIA's role was terminated by Chairman Palladino and the investigation was transferred to OIE, which conducted three investigations. Report at ¶289. The investigation by the Staff of O and W led to their admission of guilt and their termination from licensed duties at TMI. Report at ¶289. The Special Master found that the Staff did a thorough and effective job in the investigation of O and W. Report at ¶¶289, 298, 341. We concur, and no party disagrees.

2381. The OIA investigation and the first OIE investigation concerned cheating by O and W, and whether cheating was limited to O and W. Report at ¶¶289-90. The second investigation investigated allegations by YY concerning Michael Ross (Report at ¶¶142, 292); a purported telephone call from U to KK during the April 1981 NRC examination (Report at ¶292); a rumor that U was stationed near the examination room to aid examinees (*id.* at ¶293), and a

statement by P suggesting solicitation of an answer by Mr. Husted. *Id.* at ¶294. The third investigation concerned two events discovered by the Licensee: a purported telephone call to WW during the Kelly examination and Mr. Shipman's admission of giving an answer to another operator at the coffee stand. *Id.* at ¶295.

2382. In reference to the allegations about a telephone call made to KK, the Special Master concluded that the Staff did a thorough job of investigation. Report at ¶298. However, the Commonwealth disagreed. Commonwealth Proposed Finding ¶64. Consequently, we reviewed the documentation of the investigation. Staff Ex. 27. We concur with the Special Master that this investigation was adequate considering the elusive nature of the evidence and the fact that the question asked was not on the examination in progress at the time.

2383. The Special Master found that the Staff's investigation of the other allegation made by Mr. KK — that someone was stationed in the hall to assist examinees — was uneven (Report at ¶¶288-89), although he admits "Given the limits on the Staff's resources, these steps may not have seemed worthwhile at the time of the Staff's investigation." *Id.* at ¶299.

2384. In our review of the phone call incident a discrepancy was noted. The Commonwealth (Proposed Finding ¶64) stated that "More astoundingly, the Staff failed to interview Mr. O regarding his potential involvement in the Mr. U phone call. Tr. 26,258-59 (O)." Actually, O's testimony was somewhat confused at that point. Tr. 26,258-62. Later he noted that he was phoned by an NRC inspector in regard to this allegation (Tr. 26,272), and Staff Ex. 27, at 43, reports the content of this telephone interview. Therefore, the Staff did indeed interview O on this subject.

2385. On our own review of Staff Ex. 27, we also find adequate the Staff's investigation into allegations that someone was stationed near the exam room to provide assistance. The Staff interviewed and reinterviewed those Licensee personnel who would have been in a position to have answers on this subject and was unable to elicit evidence which would with certainty substantiate this allegation. Again, the nature of the evidence sought was at best elusive, based on memory of conversations, rather than on tangible documents.

2386. In regard to the Shipman incident, *i.e.*, Mr. Shipman's admission that he provided an answer to another operator during the NRC exam while at the coffee table, we concur with the Special Master that the Staff investigation was inadequate. In this case, the Licensee during its investigations into cheating yielded the information on the Shipman incident and Licensee promptly made this information available to the Staff. Staff Ex. 28. The Commonwealth, the findings of which we adopt in part, asserts that the Staff's response was inadequate. As the Commonwealth put it:

The staff's investigation of this incident is detailed in the October 28, 1981 Report of Investigation. Staff Ex. 28. Essentially, the Staff's position regarding this incident is as follows:

Beyond FF's acknowledgement of his misconduct, he maintained that he was unable to recall either the identity of the other individual or the specific question he was asked. Lacking any logical leads, the NRC plans no further investigative action in this matter.

Staff Ex. 28, at 8.

The Board views this attitude as completely unacceptable. There were only 8 individuals in the room opposite Mr. Shipman's during the April 1981 NRC exam. Lic. Ex. 83. The Staff's basis for not interviewing these individuals is that 5 of these individuals had been interviewed previously, and made general denials of cheating. Tr. 25,371-72 (Ward) (referring to "time constraints" and "cost-benefit" principles in terms of investigation time). Tr. 25,362 (Baci). Again, the Board does not agree that general questions on cheating are a substitute for a probe of specific circumstances. Nor does the Board believe that 5 out of 8 is sufficient when there is a very high probability that one of the 8 individuals actually cheated, as is the case here. . . .

Commonwealth Proposed Findings ¶¶61-62.

2387. We do not agree with the Staff that since OIE had already interviewed, in a general fashion, five of the eight operators, getting negative answers, that it would have been unproductive to ask each of all eight specifically whether he knew of the Shipman incident. Staff Comment ¶28. Nor do we buy the argument that one cannot interview every individual who might have knowledge of the event (*id.*, and Staff Proposed Finding ¶95) when the total population size is only eight and when there is only one very specific question to be asked. Clearly, in view of the consequences which have flowed from the incident — for example, the hearing time required, the preparation of findings and comments, the sense of a question left unanswered — it would have been cost-effective to have completed the investigation when the time was ripe.

2388. Concerning the Shipman incident, it is the *Licensee's* view of the Staff's response which gives us the greatest pause, as it adds a new and, to us, distorted, perspective to explain the Staff's lack of diligence. We quote the Licensee's reply to Commonwealth's Proposed Findings ¶¶61-63:

The Commonwealth faults OIE for investigating only five of the eight individuals who took the April, 1981 NRC exam in the room opposite Mr. Shipman. PA PF 61-63. We would agree, perhaps, that had Mr. Hukill not interviewed all TMI-1 operations staff members with respect to their knowledge of cheating, OIE could be faulted for not using its resources to interview the remaining three individuals. However, OIE clearly knew of Mr. Hukill's interviews prior to the commencement of its third investigation. Staff Ex. 28, at 2 (Licensee requested that OIE refrain from conducting its investigation until the Hukill interviews were completed; OIE

agreed). We do not consider it to have been unreasonable for OIE to reply on the information Mr. Hukill gleaned from his interviews. . . .

Licensee Reply Finding ¶81.

2389. As we indicated above, we commend the Licensee's conducting its own investigation of the incident and giving the results to OIE. We entertain doubt as to the propriety of OIE's agreeing to wait for the completion of the Hukill interviews before starting its own. If, indeed, as Licensee implies, OIE *relied* on the information gained by Mr. Hukill's interviews we have no doubt that such reliance, if not coupled with a full and independent investigation by OIE, constituted an inadequate response.

2390. Continuing with his findings on the adequacy of the Staff's investigation, the Special Master concluded that Mr. Husted did indeed solicit an answer from Mr. P in the unproctored exam room. Report at ¶316. The Board did not find convincing the evidence that this solicitation occurred. ¶2157, *supra*. We could understand the Staff abandoning this issue on the basis that the investigators concluded that Mr. Husted merely made a rhetorical exclamation, not a solicitation. The Staff Comments ¶¶30-32 on the Report reflect this view. However, the Staff's proposed findings represent, to us, the Staff's attitude at a time closer to the actual investigation. It is the Staff's response to the potential cheating here that the Board finds peculiar. We cannot state it any better than did the Staff itself in its Proposed Finding ¶97:

Mr. Ward [OIE investigator] was questioned extensively [during the hearing] on the subject of Mr. P's alleged statement to Mr. Ward that while Messrs. P and Husted were taking the April 1981 NRC SRO examination, Mr. Husted had solicited an answer to an examination question. Mr. Ward said that Mr. Husted's act did not constitute cheating because Mr. Husted did not receive an answer to his question. Tr. 25,415 (Ward). In addition, it was different from other incidents in that it did not raise the possibility of a conspiracy. Tr. 25,415-16 (Ward). The Director of OIE agreed that the alleged act did not fit into OIE's definition of cheating, for the purpose of the investigation. Tr. 25,418 (Ward). Mr. Ward also stated that the alleged solicitation was not directly relevant to the main thrust of the second OIE investigation, which concerned management involvement in cheating. Thus, since the writeup of the interview with Mr. P was intended to focus the facts upon the primary issue under investigation, Mr. Ward did not include Mr. P's alleged solicitation in that writeup. Tr. 25,417-18 (Ward).

2391. We disagree with the Staff and we find the response to the incident involving Mr. P and Mr. Husted to be woefully inadequate if the lack of follow-up was dictated by the considerations stated in Staff's Proposed Finding ¶97. We adopt in full the Special Master's statements (Report at ¶300), *i.e.*, that "there is no ethical or moral difference between an attempted solicitation and a successful one," that relevancy of the incident was not determined by which investigation was

underway, and that there should have been a follow-up if the Staff had reason to believe the solicitation occurred.

2392. The adequacy of the Staff's response to the Trunk Reports was faulted by the Special Master, who concluded that the Staff's response was not to read them but to simply accept Mr. John Wilson's views regarding their significance, views which the Special Master found to lack basis. He found that the Staff should have pursued evidence in the Trunk Reports suggesting cooperation by certain examinees on Licensee-administered quizzes. Report at ¶¶297, 302. Staff disagreed and claimed that the evidence did not support a finding that OIE failed to review the Trunk Reports. Staff Comment ¶33; Staff Proposed Finding ¶74; Ward, ff. Tr. 25,274, at 4. Staff witness Ward tacitly acknowledged the Staff's reliance on the views of Mr. John Wilson, Licensee's counsel, and explained Staff's decision not to pursue the matter further. Ward, ff. Tr. 25,274, at 4; Tr. 25,337-38 (Ward, Clewett). The Board believes that since the Staff had the Trunk Reports at hand, it was inappropriate for the Staff to rely not on Professor Trunk's first hand opinion and analysis, but on the analysis of Licensee's counsel. Elsewhere in our decision, the Board gives its own reasons for declining to attribute weight to Mr. Wilson's views.

2393. Because we have made our own analysis of the Trunk Reports, the Staff's failure to conduct an independent investigation of this matter has no bearing on our findings on the major issues in this proceeding. In essence the hearings themselves constituted completion of the investigation. It is arguable that the Staff's response reflects unfavorably on Staff attitude. We would have been more favorably impressed with the Staff's response had it rested with a position that the Staff accepted the Trunk Report on its own merits and did not investigate further because of more pressing priorities and a lack of resources. Tr. 25,337-38 (Ward); Tr. 25,344 (Ward). Because we do recognize the time and resource restraints on the Staff, we find the extent of Staff's response to the Trunk Reports marginally adequate.

2394. We have previously analyzed in some detail (¶2169-86) the lack of definitive evidence as to whether or not U was involved in cheating and we concluded that U must be given the benefit of the doubt. The Special Master conceded that followup of rumors about U may not have seemed worthwhile to the Staff. Report at ¶299. Considering the elusive nature of the rumors surrounding U, we find the Staff's response was adequate and appropriate, considering the Staff's priorities, resources, and time constraints.

IV. CONCLUSIONS, RECOMMENDATIONS AND REMEDIES

2395. The Special Master reported his conclusions and recommendations with respect to individuals, the corporate Licensee and the performance of the NRC Staff at ¶¶303-44 of his Report. The Board however has explained its particular

conclusions in each of these categories in the respective context of our findings of facts and the summaries of the decision above. Therefore we depart from tracking the Special Master's Report at this point and arrive at our own overall conclusions. We must consider the general effect this reopened proceeding has had upon the original mandate to this Board to determine whether the various short and long-term actions set out in the notice of hearing are necessary and sufficient to provide reasonable assurance that Unit 1 can be operated without endangering the health and safety of the public. 10 NRC at 148.

A. Management's Responsibility

2396. The Board has taken Mr. Hukill, GPU Nuclear Vice President for TMI-1, at his word when he admits to being naive with respect to cheating. Moreover we have found that Licensee's chief investigator, John Wilson, was naive in his conclusions concerning cheating by G and H and we believe that management, in turn, was naive in accepting those conclusions. Now it is our turn to consider whether the Board itself was naive in concluding in the management partial initial decision:

On the basis of the extensive record developed on training, the Board finds that Licensee has in place at TMI-1 a comprehensive and acceptable training program. Since the accident, Licensee has substantially augmented its training department and headed it with professional educators who have backgrounds in nuclear training. Licensee's programs have been reviewed by NRC and by highly qualified independent consultants. The TMI-1 licensed operators have been trained, retrained, audited and reaudited by Licensee's training personnel and independent consultants. The operators have been exposed to training in the areas they should master before operating the plant.

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The Board generally finds Licensee's training adequate and specifically finds Licensee has complied with the Commission's August 9, 1979 and March 6, 1980 Orders insofar as they relate to training. . . .

August 27, 1981 PID ¶276, 14 NRC at 475.

2397. The Board was treated to a dazzling display of credentials in Licensee's case on its training program. Licensee employed a committee of nationally eminent experts to evaluate its Operator Accelerated Retraining Program (OARP). Dr. Julien N. Christensen is renowned for his work in research and education in human factors engineering. *Id.* at 462-63. Dr. Eric Gardner is widely respected as an expert in educational psychology with special expertise in educational psychological measurement, psychometrics, test construction and curriculum and program evaluation. Dr. William Kimel, Dean of the University of Missouri College

of Engineering, represented nuclear engineering on the committee. Practical experience was represented by the manager of technical training for Duke Power, Richard Marzec, and Dr. Robert Uhrig, Vice President for Advanced Systems and Technology for Florida Power and Light. *Id.* at 453. Also involved in the construction of the training program curriculum were Babcock and Wilcox, Gilbert Associates and NUS Corporation. To consult and aid in the execution of its training program, Licensee retained PQS Corporation, headed by Frank Kelly, with experience including service as chief of AEC Operator Licensing Branch. *Id.* at 460.

2398. We were also impressed with the credentials and experience of Dr. Robert Long who was then Director of corporate Training and Education for GPU Nuclear with the Nuclear Assurance Division. His background included both nuclear engineering and education. He had been a long-time member of the Nuclear Engineering Department at the University of New Mexico where he served also as Department Chairman and Assistant Dean of the College of Engineering. *Id.* at 450. Similarly the Manager of Training at TMI-1 was Dr. Ronald A. Knief with a doctorate in nuclear engineering who also has experience in education at both the university and non-university levels. *Id.* at 444. Finally, the Supervisor of Operator Training at TMI-1 is Samuel Newton, a Naval Academy graduate with a masters degree from the Naval Post Graduate School. He had twelve years experience in the Navy's nuclear program. He supervises the thirteen licensed operator instructors. *Id.* at 445.

2399. After again evaluating our partial initial decision on Licensee's training program in light of the developments in the reopened proceeding, we remain convinced that the evidence supported the conclusion that Licensee's training program was well designed to train qualified operators and that there was a rational plan to implement the program. As we noted above, on the one occasion when the integrity of the examination procedures was questioned, the Board reasonably inferred that suitable action would be taken, *i.e.*, requalification tests would be "closed-book".

2400. We remain satisfied that Licensee was unstinting in the resources devoted to the training program. It cannot be faulted in the selection of the advice it sought for its training program, the credentials of its training managers or on the general design of its training program. The cheating episodes are not a reflection on upper-level management's competence, good intentions and efforts.

2401. Where, then did the program fail? Although the reopened proceeding did not cover the issue directly or fully, we believe that the answer is apparent from the record of the reopened and main proceedings. Our summary conclusion is that the integrity of Licensee's training and testing program failed because there was not a clear appreciation of which personnel or which component of Licensee's management had responsibility for the integrity of the program; and because there was a failure to apply the principles of quality assurance and quality control to the instruction and examination process.

2402. Mr. Hukill came to the hearing and accepted responsibility for the cheating of his operators and responsibility for seeing that examination administrative safeguards are in place. Hukill, ff. Tr. 25,913, at 2-5, 16. As the senior management person at the Unit, Mr. Hukill is responsible for its safe operation and is ultimately responsible for the competence of his operators and their discipline. He did well not to quibble about the details of his responsibility. The TMI-1 manager of operations, Michael Ross, also accepts responsibility for the cheating by his operators. Ross, ff. Tr. 24,127, at 5-6. But the fact is, it was the Division of Nuclear Assurance under its Vice President, John Herbein, and the Training and Education Department within that Division, under Dr. Long, which have the responsibility for preserving the integrity of the company's training program. 14 NRC at 443.

2403. In our management partial initial decision we noted with approval that Mr. Hukill as Vice President of Unit 1 would be relieved of all but minimum responsibilities not directly associated with the operation and maintenance of the unit so that he could devote full attention to those functions. We noted in that context that Nuclear Assurance would handle training for him. *Id.* at 415. The Division of Nuclear Assurance was to have been an independent division with the "same strength and status as operations would have; not a collateral duty for people who also have line responsibility." *Id.* at 406 *citing* Arnold at Tr. 11,438-40.

2404. As we understood Licensee's plan of organizing GPU Nuclear, the concept of placing training in the corporate Nuclear Assurance Division, which also houses Quality Assurance, Nuclear Safety Assessment, and Emergency Planning, was to provide independent quality assurance concepts to the training function in addition to relieving line management personnel of the responsibility for training.

2405. Quality Assurance programs, as required by Appendix B to Part 50, extend to operational safety quality as well as to machinery and structures. Training and verification of training of personnel whose activities affect quality are covered by Section II of Appendix B.

2406. Dr. Long has succeeded Mr. Herbein as Vice President of Nuclear Assurance.²⁴⁹ While Dr. Long acknowledges that the omission of instructions leading to cheating was a mistake, he is "reluctant to be too self-critical on this subject because of the *implicit* understanding . . . that cheating is totally unacceptable behavior. . . ." [Underlining in testimony.] Long, ff. Tr. 24,925, at 3. He likens the problem to a factory, where ". . . one probably does not tell factory workers not to steal parts from the assembly line." *Id.* But neither does one allow one's factory to be stolen. This is where quality assurance and quality control come into play.

²⁴⁹ Letter dated March 11, 1982 from Licensee's counsel Blake to the Appeal Board.

2407. The Board could not determine from Dr. Long's testimony that he fully understands that his Training Department failed in its responsibility and that the failure was the principal and proximate cause of the breakdown in the integrity of the training and testing program. For example, as we noted above, the Training Department failed to include in its list of examination safeguards a provision for a post-examination sampling of answers for evidence of cheating — a measure which the NRC Staff has found necessary for its own examination integrity. Moreover the failure of the Training Department to assure the quality of its program extends also to a failure to assure the quality of the instruction.

2408. The Union of Concerned Scientists (UCS), in its post-hearing participation has led the Board through the management partial initial decision, and particularly through the partial initial decision on plant design and procedures where UCS was a very active party. 14 NRC 1211 (December 1981). UCS points out the many instances where the Board found that safety depends upon correct operator procedures and training and reminds us that we preserved jurisdiction because:

The issues of Licensee's management integrity, the quality of its operating personnel, its ability to staff the facility adequately, its training and testing program, and the NRC process by which the operators would be tested and licensed, are all important issues considered in this partial initial decision.

14 NRC at 1708.

2409. UCS concludes that the reopened proceeding under the Special Master demonstrated that the TMI-1 operating staff is incompetent, that the operators cannot be relied upon to follow procedures essential to safe operations, and that the Board should immediately withdraw its restart authorization. UCS Comments, May 18, 1982, *passim*.

2410. Our answer to UCS is that we have not found the TMI-1 operators to be incompetent. Most of them were already licensed. Unlike operators' at other nuclear plants, they have had to take two additional initial NRC operators' license examinations. These have required a great amount of additional studying. We have reaffirmed that their training has included the best possible course content. Our major finding, it must be recalled, is that there was a failure of quality assurance of the integrity of the examination and quality assurance of the instruction. Although we are concerned about weaknesses in the quality of instruction, and have imposed conditions directed to that concern, we have not found that the instructors have failed to instruct. Nor have we found that the students failed to learn. Whatever the quality of instruction methods, the intense and repeated exposure to the course material necessarily must contribute to the competence of the operators. Finally, it must also be recalled that a major concern of the Board in preserving jurisdiction was doubt about whether the Licensee would be able to meet its staffing commitments for Unit 1. We have found that the operators have been reexamined by the

NRC under suitably controlled circumstances and we have reaffirmed that Condition 9 for the staffing of Unit 1 will and must be met. 14 NRC at 580-81.

B. Sanctions

2411. The Board imposes a \$100,000 monetary penalty upon the Licensee because its management negligently failed to safeguard the integrity of its examination process, because it failed to instill an attitude of respect for the company and NRC examinations process, because it failed to assure the quality of training instruction and because of negligence in the procedures for certification of candidates for the NRC licensing examinations. No part of this penalty is related to the certification of VV to the NRC in August 1979. We cannot find from the original Notice of Hearing, 10 NRC 141, that the Commission anticipated a monetary penalty. However we do not read the Notice as foreclosing that remedy. We believe that such a penalty is desirable, thus necessary, in the long term to provide reasonable assurance that the Unit can be operated without endangering the public health and safety and payment of the penalty should be required. *Id.* at 148.

2412. If we were not convinced that the Licensee is capable of correcting and intends to correct the problems revealed by this reopened proceeding, with or without the penalty, we could not, as we do, conclude this proceeding in favor of restart. A penalty will be long remembered, however, and will emphasize the importance of the corrective administrative procedures to those charged with implementing them and with those charged with obedience to them. It will, we believe, remind those who, either by omission or commission, have created these problems, GG and Mr. Shipman, Dr. Long, G and H, for example, of the damage these episodes have caused their colleagues on the operating staff and their employer, and the erosion of the public confidence in their competence and integrity. The amount, \$100,000, is not the result of mathematical calculation nor was it arrived at with the Commission's guidelines on Civil Penalties. This is a remedial, symbolic penalty intended to attract the attention of all interested parties.

2413. We recognize that the Licensee was not notified that a penalty might be assessed and has had no opportunity to address it. As noted, we find that it is a long-term remedial action. Therefore, it need not be imposed before restart. Whether it is appropriate and whether we have jurisdiction to impose it may, therefore, be the subject of the regular appellate process. If our jurisdiction should be found wanting, this action should be regarded as the Board's recommendation.

2414. With the exception of G and H, the Board has not imposed or recommended sanctions against any company personnel. There are several reasons for this. As we noted above in our recommendation that G and H accept a voluntary suspension, no individual member of Licensee's organization has been a party to this proceeding. None have had notice of possible penalties, and because of the sequestration order, they have not even had the opportunity to confront the

evidence adduced against them. We have no authority to sanction any individual without a further proceeding. But where the evidence has been reliable and definite, and where the malfeasance has been substantial we have, in fact, recommended further procedures or sanctions, as in the case with G and H. And of course the Board could not ignore the question raised by the certification of VV to the NRC in August 1979.

2415. However, where the evidence has been uncertain (as with U) or where we have found the conduct not to be shocking, as with GG and Mr. Shipman, the Board has decided to let matters rest without further action, even though perfect justice might have required further redress. Also we are permitting the inquiry to end without further attempting to identify the persons who cheated by receiving answers from Mr. Shipman and WW. The Board believes this to be the wisest course, because we have no expectation that subsequent investigations or inquiries would improve upon the record made before Judge Milhollin. We also believe that it is time for the cheating inquiries to come to an end.

2416. The TMI-1 manager of operations testified that the operators are bitter about the repeated need to take the NRC examinations. Ross, ff. Tr. 24, 127, at 5. And, as P testified, test candidates were rightfully annoyed that the failure to proctor the NRC examination created a situation in which their integrity could be challenged. Doubtless the TMI-1 operators have been the subject of community derision, and, according to O and W, even threats because of the cheating disclosures.

2417. There is no evidence whatever that the large majority of the TMI-1 operators lacked competence and integrity. They have good cause to be unhappy with their treatment. Although the Commission appropriately acted in the broader public interest, the effect of the Notice of Hearing in this case was to void the full-power operator licenses of all the TMI-1 control room staff without the scarcest element of due process. The need to take the second NRC reexamination in October 1981 wiped out the benefits fairly earned by the honest candidates who passed the April reexamination. The entire proceeding with respect to examination integrity, although necessary, has been demoralizing, unfair to the honest operators, and, we are concerned, it may have been a distraction from their duties as control room operators.

2418. Therefore the Board has selected sanctions which were intended to be definite, final and appropriate in the context of the present evidentiary record.

V. RECOMMENDATIONS, PENALTY AND CONDITIONS

2419. The Board recommends that:

- (1) A proceeding be initiated pursuant to 10 CFR Part 2, subpart B, and 10 CFR 55.40 to consider the modification or suspension of the operators'

licenses of G and H unless during the Commission's immediate effectiveness review, the Licensee reports that G, H and the Licensee accept the Board's proposal that G and H voluntarily receive a two-week suspension without pay.

- (2) The Commission direct the NRC Staff to conduct an investigation into the August 3, 1979 certification of VV to the NRC for operator's license renewal in accordance with the Board's discussion at ¶2313-14, *supra*.
- (3) If it should be decided on review that the Board lacks jurisdiction to impose a monetary penalty on the Licensee, a penalty in the amount of \$100,000 should be imposed by the Commission on the Licensee for negligent failure to safeguard the integrity of its examination process, failure to instill an attitude of respect for the company- and NRC-administered examinations, failure to assure the quality of training instruction and negligence in the procedures for the certification of candidates for the NRC licensing examinations.

2420. The Board imposes on the Licensee a monetary penalty in the amount of \$100,000 as a long-term remedy to provide reasonable assurance that TMI-1 can be operated without endangering the public health and safety.

2421. The Board imposes the following conditions on the restart of TMI-1:

- (1) There shall be a two-year probationary period during which the Licensee's qualification and requalification testing and training program shall be subjected to an in-depth audit by independent auditors, approved by the Director of NRR, such auditors to have had no role in the TMI-1 restart proceedings.
- (2) Licensee shall establish criteria for qualifications of training instructors to ensure a high level of competence in instruction, including knowledge of subjects taught, skill in presentation of knowledge, and preparation, administration, and evaluation of examinations.
- (3) Licensee shall develop and implement an internal auditing procedure, based on unscheduled ("surprise") direct observation of the training and testing program at the point of delivery, such audits to be conducted by the Manager of Training and the Supervisor of Operator Training and not delegated.
- (4) Licensee shall develop and implement a procedure for routine sampling and review of examination answers for evidence of cheating, using a review process approved by the NRC Staff.
- (5) Until further order in this proceeding, any participation of Gary P. Miller in the start-up, testing or operation of TMI-1 shall be under the direct supervision of an appropriately qualified official of GPU Nuclear Corporation.

2422. The Board directs the Licensee to preserve all records pertaining to the investigation recommended at ¶¶2312-14, *supra*.

VI. CONCLUSIONS OF LAW

2423. The Board concludes that in consideration of the findings, recommendations, and conditions set out above, the issues in the proceeding reopened by the Board's Order of September 14, 1981 have been resolved in favor of restarting Three Mile Island Unit 1 and that the conclusions of the Partial Initial Decisions of August 27, 1981, 14 NRC 381, and December 14, 1981, 14 NRC 1211, remain in effect.

VII. EFFECTIVENESS AND APPEALABILITY

2424. By Order of March 10, 1982 the Commission announced that it will not make any decisions regarding immediate effectiveness of the Board's partial initial decisions of August 27, 1981 and December 14, 1981 until the Board has rendered this decision. The parties were invited to file comments on whether this decision should be made immediately effective if it is favorable to restart. Our conclusions are favorable to restart. The Commission's Order provided that comments should be filed within fourteen (14) days after service of the Board's decision and that reply comments should be filed within seven (7) days after service of the initial comments.

2425. Within ten days after service of this Partial Initial Decision, any party may take an appeal to the Appeal Board by filing exceptions to all or portions of the decision. A brief in support of the exceptions shall be filed within thirty days thereafter or within forty days in the case of the Staff. 10 CFR 2.762. Any request to modify the time period set out in Section 2.762 should be made to the Appeal Board designated to hear the initial appeals.

THE ATOMIC SAFETY AND LICENSING BOARD

Walter H. Jordan
ADMINISTRATIVE JUDGE

Linda W. Little
ADMINISTRATIVE JUDGE

Ivan W. Smith, Chairman
ADMINISTRATIVE LAW JUDGE

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

Harold R. Denton, Director

In the Matter of

Docket No. 50-133

PACIFIC GAS & ELECTRIC COMPANY
(Humboldt Bay Power Plant, Unit 3)

July 7, 1982

The Director of Nuclear Reactor Regulation denies a petition under 10 CFR 2.206 that requests action to revoke the operating license for the Humboldt Bay plant and to decommission the facility.

DIRECTOR'S DECISION UNDER 10 CFR 2.206

Mr. Ron Guenther by letter dated January 16, 1982 to the Atomic Safety and Licensing Board requested that the Humboldt Bay Power Plant, Unit No. 3 be decommissioned. That letter was resubmitted to the Director of Nuclear Reactor Regulation on February 20, 1982. Notice of receipt of this request was published in the *Federal Register* on April 4, 1982 (47 *Fed. Reg.* 14632). Mr. Guenther submitted additional information to support his request by letter dated June 8, 1982.

Mr. Guenther asserts a number of reasons why the Humboldt Bay Plant should be decommissioned. After considering the request, for the reasons set forth below, I have concluded that the maintenance of the Humboldt Bay Plant in its present status does not adversely affect the public health and safety and therefore no basis exists to require the decommissioning of the Humboldt Bay Plant at this time. Accordingly, I have determined that Mr. Guenther's request must be denied.

I.

On July 2, 1976, the Humboldt Bay Plant was shut down for replacement of some of the fuel in the core. By Order dated May 21, 1976, the NRC required that before resuming operation, the Pacific Gas and Electric Company (the licensee) complete certain activities. The licensee was required to upgrade as necessary, the seismic capability of safety-related equipment (*e.g.*, the reactor coolant pressure boundary) to current requirements, and to resolve more recent seismic concerns having to do with earthquake vulnerability that had arisen since the time the operating license was issued on August 29, 1962.

The licensee has replaced the fuel in the core, undertaken extensive geological investigations, and completed some plant modifications. The question of future operation of the Humboldt Bay Plant is before a Licensing Board which on February 16, 1982 issued a Memorandum and Order which accepted the staff's conclusion that the Humboldt Bay Plant in its present shutdown condition poses no undue risk to the health and safety of the public. In addition, the Board established a time table for the licensee to decide whether it would resume operation of the plant or decommission it.

All of the issues which Mr. Guenther cited in his letters had been previously considered by the staff. The letters contained no new information or safety concerns unknown to the NRC. The seven issues raised by Mr. Guenther's letter that are within NRC jurisdiction are discussed in detail below. The other issues regarding economic impacts on ratepayers of a decision to decommission do not lie within the purview of the NRC and, therefore, are not addressed in this decision.

1. Plant Design and Operating History

Mr. Guenther's letter alleges that

"The subject nuclear power plant is poorly and inadequately designed for safe operation, and has a long history of operating and safety failures deriving directly from design deficiencies."

As noted above, the Humboldt Bay facility is presently shut down. The NRC staff is not aware of previous problems of a type which would cause concern as to the ability of the licensee to maintain the plant in its present safe shutdown condition. The enclosed Staff Affidavits (Enclosure 1), originally submitted to the Atomic Safety and Licensing Board on November 19, 1981, describe the current status of the Plant and its recent inspection history.

Before approving the resumed operation of Humboldt Bay Power Plant Unit No. 3, the NRC staff will require correction of significant design deficiencies. The operating history of the plant will also be considered prior to approving resumed reactor operation, to the extent that the history is pertinent, considering the elapsed shutdown interval of greater than five years' duration. The staff considers the plant

design, as well as its operational record, to be acceptable for the present shutdown condition of the plant.

2. Seismic Design

Mr. Guenther's letter also alleges that

"Three earthquake faults have been discovered within 4,000 feet of the reactor, and appropriate design safety measures were not incorporated into either the reactor's design or construction. The subject plant does not conform to the Nuclear Regulatory Commission seismic standards. The cost of bringing the subject plant into compliance with these standards could exceed \$300 million, compared with estimated decommissioning costs of \$35 million. Decommissioning is therefore the preferred economic alternative."

The Humboldt Bay Plant was issued a provisional operating license in 1962 based on seismic design practices acceptable at that time. In the course of review associated with changing the provisional operating license to a full term operating license in 1969, questions arose which resulted in further seismic studies at the site. During the course of this seismic reevaluation, as the regional geologic picture was developed in greater detail, the confidence that the original plant design could withstand all postulated seismic events declined. For this reason the geologic/seismic investigations and the seismic design upgrading were required to be completed prior to restart from the 1976 refueling outage. Therefore, seismic design inadequacy has already been identified as a deficiency that must be corrected before approval of resumed operation. The decision of whether to incur the costs of implementing whatever design changes are deemed necessary or decommission the facility is one which the company and the state ratesetting body must make. Such economic decisions are not within the purview of the NRC.

Mr. Guenther's letter alleges that

"The subject nuclear power plant's operating record is among the worst in the history of nuclear power. The public has been presented no convincing evidence that this sorry and irresponsible operating history will, or even can change for the better. The latest evidence indicates that the utility will continue to operate the subject plant in a negligent, irresponsible, and unsafe manner."

Humboldt Bay Power Plant No. 3 has been shut down since July 2, 1976. Since that time, the standard inspection (surveillance) program for a shutdown reactor has been performed by the NRC regional office at the Humboldt Bay Nuclear Power Plant. This inspection consists of inspections of design changes and modifications, activity of the Onsite Review Committee, QA program, overall training program, fire prevention and protection, surveillance of equipment during extended shutdown, security and material accountability, radiation protection

program (as reported in news clipping attached to Mr. Guenther's June 6, 1982 letter), transportation of radioactive materials, and radioactive waste management. Recent inspections have not revealed any major problems at the plant (see attached affidavit of Tolbert Young). Before approving resumption of operation, the staff will review this operating record, the operational history of the plant prior to 1976, and other considerations to determine that the utility and operating staff are capable of safely operating the plant. The staff considers, based on our review of the operation of the facility since 1976, that the staffing and servicing of the plant are adequate for its present shutdown condition.

4. Disregard for Public Health and Safety

Mr. Guenther's letter alleges that

"The utility has failed to comply with an Atomic Safety and Licensing Board order to reveal how the company expects to bring the subject power plant up to current Nuclear Regulatory Commission seismic standards. This latest example of the utility's continuing reckless disregard for the public health and safety indicates plant decommissioning as the only practicable solution for problems of public protection"

The Atomic Safety and Licensing Board has ordered (Memorandum and Order dated February 16, 1982) that the licensee report, at a future date, plans for long term use of the Humboldt Bay Plant, and in the meantime submit every three months, status reports to the Board. The licensee has submitted these reports, and the Board has not found the licensee's responses unacceptable. The staff does not regard the licensee's response to the Board Order as exhibiting any failure to comply nor as evidence of an attitude of disregard for public safety. In summary, the staff does not believe that the conduct of the utility during the proceedings before the Board represents a disregard for the public health or safety.

5. and 6. Economic Considerations

Mr. Guenther's letter alleges

"The subject power plant is one of the oldest commercial nuclear power plants under the Board's jurisdiction. It went on line in 1963. Approximately 1/2 to 1/3 of the plant's life expectancy has elapsed. Decommissioning at this time would save future ratepayers substantial expenditures before embrittlement, increased residual radioactivity, and other safety problems become acute, and decommissioning costs rise dramatically," and also

"As the utility continues to engage in delaying tactics which prolong the process of solving public protection problems, it continues to maintain and

to protect the subject plant. Since 1976 the costs of maintenance have been approximately \$15 million. Decommissioning the plant would eliminate at least maintenance problems for core loadings, and would cut the necessary costs of plant surveillance until the plant could be either dismantled and moved to its final repository, or entombed in situ.”

As previously noted, the impacts on ratepayers or shareholders of a utility’s decision to operate or decommission its facility is not within the purview of the NRC.

7. Waste Disposal

Mr. Guenther’s letter alleges that

“No permanent facility for safely disposing of the nuclear wastes deriving from the operation of the subject plant exists at this time. This would include the approximately 35 tons of high-level waste now being stored at the plant site at substantial risk to the public health and safety in the area, downwind, and downcurrent from the site.”

The Department of Energy (DOE) is responsible for developing the methods and technology for the permanent disposal of high-level radioactive waste in a Federal repository and for submitting a license application for a potential repository. DOE is currently studying the feasibility of high-level waste disposal in deep geologic media. The Nuclear Regulatory Commission (NRC) has promulgated licensing procedures for disposal of high-level wastes in geologic repositories and has published proposed technical criteria.

In its present shutdown condition the Humboldt Bay Plant is not generating additional radioactive waste. The staff considers that the health and safety of the public is adequately protected from the radioactive waste presently stored at the Humboldt Bay Plant.

8. Population Density

Mr. Guenther’s letter alleges that

“Human population densities exist only a very short distance from the subject plant site. As examples, heavily travelled Highway 101 is only 1,500 feet from the reactor. There exists a nearby residential community, beginning only ¼ mile from the plant. In case of accident, release of radioactivity from the plant would seriously endanger human life in the area. Additionally, cumulative losses of life could occur in areas downwind and downcurrent from the subject site.”

The consequences and types of accidents are greatly diminished because of the present condition of the plant. Staff analysis has concluded that Humboldt Bay fuel

has decayed sufficiently that air cooling is adequate to preserve fuel cladding integrity. Therefore, measures to assure core cooling or mitigate loss of coolant consequences are unnecessary. Due to the long period since the reactor last operated, mobile radioactivity has decayed very significantly.

Population density was considered in the original licensing of the Humboldt Bay Plant, as well as the possibility of population growth and redistribution. For the present shutdown condition of the plant, the population around the plant is adequately protected. The staff will consider changes in population density near the Humboldt Bay Plant before approving resumed plant operation.

9. Proximity of Humboldt Bay

Mr. Guenther's letter alleges that

"Humboldt Bay is immediately proximate to the subject nuclear power plant site. Safety problems inherent in the plant's radioactive discharges on sealife, and on the human foodchain, have not been effectively recognized, evaluated or dealt with."

Before approving the resumption of operation for the Humboldt Bay Plant, the staff will perform any evaluations of the environmental effects of the operation of the Humboldt Bay Plant which might be required. As discussed in the response to Item 8, the significance of accidents is reduced by the present condition of the plant. In the plant's present shutdown condition, plant radioactive discharges are much less than when the plant was operating and are well within NRC regulatory limits. The releases are considered acceptable.

II.

Based on the foregoing I have determined that the requested decommissioning of the Humboldt Bay Power Plant, Unit No. 3 is not warranted. The health and safety of the public are adequately protected from the facility in its present shutdown condition. All safety issues pertinent to an operating reactor will be resolved before future operation of the Humboldt Bay facility is permitted. Consequently, Mr. Guenther's petition for decommissioning of the Humboldt Bay facility is denied.

A copy of this decision will be placed in the Commission's Public Document Room at 1717 H Street, NW, Washington, D.C. 20555 and in the local public document room at the Humboldt County Library, 636 F Street, Eureka, California 95501.

Additionally, a copy of this decision will be filed with the Secretary of the Commission for review by the Commission in accordance with 10 CFR Section 2.206(c) of the Commission's regulations. As provided in 10 CFR 2.206(c), this

decision will constitute final action of the Commission twenty-five (25) days after the date of issuance, unless the Commission on its own motion institutes the review of this decision within that time.

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland,
this 7th day of July 1982.

(The enclosures have been omitted from this publication but may be found in the Public Document Room, 1717 H Street, NW, Washington, D.C. 20555.)

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

Harold R. Denton, Director

In the Matter of

Docket Nos. 50-443
50-444
(10 CFR 2.206)

PUBLIC SERVICE COMPANY OF
NEW HAMPSHIRE
(Seabrook Nuclear Station,
Units 1 & 2)

July 6, 1982

The Director of Nuclear Reactor Regulation denies a petition under 10 CFR 2.206 that requested initiation of show-cause proceedings on the basis of the licensee's alleged lack of financial qualifications.

TECHNICAL ISSUE DISCUSSED: FINANCIAL QUALIFICATIONS

In light of the elimination of the Commission's financial qualification requirements, the Director of Nuclear Reactor Regulation denies a request for initiation of show-cause proceedings in the absence of a connection between alleged financial constraints and a particular safety problem.

DIRECTOR'S DECISION UNDER 10 CFR 2.206

On February 5, 1982, Mr. Robert A. Backus, on behalf of the Seacoast Anti-Pollution League, submitted a petition under 10 CFR 2.206 requesting that the Director of Nuclear Reactor Regulation issue an order to show cause why Construction Permits Nos. CPPR-135 and CPPR-136 of the Public Service Company of New Hampshire (PSCNH) should not be suspended or revoked because of an alleged lack of financial qualification.

Effective March 31, 1982, the Commission's regulations were amended eliminating the financial qualification requirements. 47 Fed. Reg. 13750 (March 31, 1982). This action was taken after careful study and extensive consideration of public comments. The reasons for eliminating these requirements included the Commission's determination that the financial condition of a utility, in and of itself, does not affect the quality of the construction and operation of a nuclear power plant in a manner which is direct enough to warrant the expenditure of the substantial amount of the Commission's resources necessary for its evaluation. It was decided that these resources would be better used if directed to the examination of those factors which affect the public health and safety more directly.

The Commission continues to be concerned with the radiological protection of the public health and safety in all aspects of the construction and operation of nuclear power plants. In those instances where financial constraints of a utility can be directly connected to a particular public health and safety problem, the Commission will take the appropriate action. However, the petitioner has raised no such connection in his petition, and routine inspections to date have revealed no degradation of quality assurance in the construction of the Seabrook facility. Furthermore, as part of the nationwide NRC inspection program, a Construction Assessment Team is currently investigating the quality of construction at the Seabrook facility. The results of the investigation will be examined to insure that proper quality assurance programs are being followed.

Financial constraints, in a vacuum, are an insufficient basis for initiating show-cause proceedings against a utility. In light of this, the petitioner's request is hereby *denied*.

A copy of this decision will be filed with the Secretary of the Commission for the Commission's review in accordance with 10 CFR 2.206(c).

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland,
this 6th day of July 1982.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

Harold R. Denton, Director

In the Matter of

Docket Nos. 50-373
50-374
(10 CFR 2.206)

COMMONWEALTH EDISON COMPANY
(LaSalle County Generating Station,
Units 1 and 2)

July 19, 1982

The Director of Nuclear Reactor Regulation denies in part petitions filed under 10 CFR 2.206 by the Illinois Attorney General and the Illinois Friends of the Earth regarding deficiencies in construction of LaSalle Unit 1. Remaining matters concerning LaSalle Unit 2 are under investigation.

DIRECTOR'S DECISION UNDER 10 CFR 2.206

Attorney General Tyrone C. Fahner, Esquire, on behalf of the State of Illinois, has filed a petition pursuant to 2.206, dated March 24, 1982, and an amendment thereto, dated May 3, 1982, requesting institution of a show cause proceeding on Commonwealth Edison Company's, La Salle County Station, Units 1 and 2. The petition and amendment set forth allegations of poor construction. In addition, Ms. Bridget Little Rorem, on behalf of the Illinois Friends of the Earth, Essex, Illinois has also filed a petition, dated April 28, 1982, pursuant to 10 CFR 2.206, requesting institution of show cause proceedings on the basis of certain allegations concerning improper construction practices at the La Salle County Station, Units 1 and 2, and further, sought to halt immediately further loading of nuclear fuel at La Salle Unit 1. Ms. Rorem's petition enclosed four affidavits from construction workers setting forth allegations of various improper practices. The NRC staff denied the petitioners' requests for immediate relief by letters dated April 17,

1982, May 19, 1982 and June 2, 1982. In connection with its review of the Attorney General's petition, the NRC staff met with representatives of Commonwealth Edison Company, Sargent and Lundy, and the Attorney General on March 31, 1982, in Bethesda, Maryland. On April 13, 1982, the Attorney General submitted comments on Commonwealth Edison Company's presentation at the March 31st meeting. Commonwealth Edison Company has responded to the Attorney General's petition in submittals dated March 31, May 7, and May 18, 1982. The Attorney General provided additional comments in a letter dated May 26, 1982.

A license was issued on April 17, 1982 to the Commonwealth Edison Company to permit the loading of nuclear fuel assemblies into La Salle Unit 1 and also permitting initial criticality and low power physics testing. The April 17, 1982 license authorized power levels up to and including 5 percent of rated power; however, it requires NRC staff approval prior to going beyond zero power testing. Specifically, the license contained a license condition which stated:

"The licensee shall complete its assessment of the rebar damaged due to drilling and coring in concrete and the structural adequacy of the off-gas building roof. The results shall be reported to the NRC staff for review and approval, prior to operation following initial criticality and zero power physics testing."

The NRC staff has completed its special inspection into those allegations identified in the above petitions required in order to proceed with licensing of La Salle, Unit 1. The enclosed Region III special inspection report addresses the NRC findings with respect to these allegations as expanded following interviews held with allegers. As indicated in the report, we have grouped the allegations as expanded into three categories:

- (1) Category 1 — those allegations requiring satisfactory resolution in order to proceed with the licensing process of La Salle Unit 1;
- (2) Category 2 — those allegations that were judged to require a follow-up on a longer time frame which relate to only La Salle Unit 2, personnel concerns, and activities not having immediate safety impact; and
- (3) Category 3 — those allegations which range from the too general and unsubstantiated to pursue to those which are subject to regulatory jurisdiction of other agencies, or for which no further action is required by the NRC staff.

As indicated by the report, there were 20 Category 1 allegations of which some were not able to be substantiated by the NRC investigation. For several others, the factual allegations were correct; however, these conditions were found to be acceptable when the entire system of controls was examined. One allegation relating to improper site security matters resulted in finding violations of the licensee's security requirements. When these were brought to the licensee's attention, prompt corrective actions were taken. One allegation of falsification of

torque wrench calibration records by a site contractor was substantiated. In a related area, although separate in its cause, a few loose bolts were found on some valves. To provide greater assurance of the adequacy of the bolt tightness, the license of La Salle Unit 1 is being amended to include a license condition requiring that prior to January 15, 1983, the licensee check the torque on all non-pressure boundary bolts (bolts whose failure will affect the operability of the valve) on each safety-related valve located outside the containment. For non-pressure boundary bolts on safety-related valves located inside containment, a similar program was successfully completed by the licensee prior to the conclusion of this inspection period. For the remainder of the safety-related valve bolting, namely those at the reactor coolant pressure boundary, such a check is not being required on the basis that this bolting has been functionally checked during a preoperational hydro test on the reactor coolant boundary.

The items included in Category 2 concerned matters regarding La Salle Unit 2 and other matters requiring further NRC attention. These matters arose primarily out of allegations contained in the affidavits submitted to the NRC and in statements made by persons interviewed by the NRC staff in the course of investigating the allegations. The allegations concern installation activities, a fire, and the condition of the basemat at La Salle Unit 2. The NRC staff will consider these matters further through review of prior inspection reports, additional inspections, and interviews of plant personnel. On the basis of this additional review, the NRC staff intends to issue an additional decision prior to taking licensing actions on La Salle Unit 2.

Other Category 2 items included allegations in the affidavits of installation of damaged equipment, communication problems with representatives of the architect-engineer and poor attitude on the part of management and supervisory personnel. In addition, further assurance that this problem does not exist will be obtained during pre-operational testing, since testing should reveal any problems attributable to damaged or defective equipment. The NRC staff will perform follow-up investigation of allegations directed toward Commonwealth Edison's management and the architect-engineer. On the basis of our review of the allegations, no immediate and substantial safety issue has been identified that would warrant enforcement action or further restrictions of authorized power level.

The affidavits contain some general allegations of inadequate NRC inspection coverage and improper inspector conduct toward plant workers. In the absence of a demonstrable link to specific safety problems or licensee misconduct, improper conduct or inadequate inspections by NRC inspectors would not warrant initiation of show cause proceedings against the licensee to rectify what would be essentially an internal Commission problem. The NRC staff has thoroughly reviewed and pursued the allegations in the petitions and the affidavits and has not found to date a substantial safety hazard warranting initiation of show cause proceedings.

The NRC staff has included in Category 3 allegations derived from the affidavits and additional statements made by persons interviewed by the NRC for which insufficient information could be developed to warrant further NRC action or for which NRC would not take action. Allegations in the affidavits that piping was improperly installed and that equipment was not installed in accordance with blueprints could not be addressed owing to the lack of specific information that could be developed on the basis of pursuing the allegations with the alleged. During the course of the NRC's investigation of the matters raised in the petitions and affidavits, a general allegation was made that drug and alcohol abuse had occurred at the site, but the alleged was unable to provide any specific information. In view of the lack of specific information and in view of the results of the remainder of the NRC staff's investigation of the allegations, no further action is contemplated and no basis for enforcement action exists on the basis of the foregoing allegations at this time.

Allegations were made by the affiants and during further interviews that the circulating water pipe was defective, a bulge existed in the concrete wall of the condenser pit, and there were loose bolts on beams in the Unit 2 turbine buildings. No further NRC action is planned with respect to these allegations because the allegations do not concern safety-related structures and equipment. These matters have been identified to Commonwealth Edison Company for its action as appropriate. Similarly, no further action is contemplated by the NRC with respect to alleged "gross waste" and cost increases that have no apparent bearing on the NRC's health and safety responsibilities. The allegations concerning poor working conditions and inadequate worker safety have been referred to appropriate governmental authorities with jurisdiction over occupational health and safety matters. It should be noted that neither the Attorney General nor Bridget Little Rorem rely specifically in their petitions on the foregoing aspects of the affidavits as a basis for initiating show cause proceedings and halting further licensing of the La Salle facilities.

For the reasons set forth in this decision and in my interim responses to the petitioners, the requests of the Attorney General and Bridget Little Rorem for initiation of show cause proceedings have been *denied* with respect to La Salle Unit 1.

In view of the above, I have concluded that for La Salle Unit 1 the public health and safety is not jeopardized, and does not warrant issuance of an order to show cause. However, for La Salle Unit 2, further investigations will be performed with respect to those outstanding allegations pertaining only to La Salle Unit 2, and the NRC staff will continue to review these matters and issue a further decision prior to taking licensing actions on Unit 2. As provided in 10 CFR 2.206(c), a copy of this

decision will be filed with the Secretary for the Commission's review in accordance with 10 CFR 2.206(c).

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland,
this 19th day of July, 1982.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gillinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of
KERR-McGEE CORPORATION
(West Chicago Rare Earths
Facility)

Docket No. 40-2061

August 6, 1982

The Commission delegates to the Director of the Office of Nuclear Material Safety and Safeguards (NMSS), or such NMSS Branch Chief or above as he may designate, the authority to conduct an informal adjudicatory proceeding on petitioner's contentions concerning licensee's application for an amendment to its 10 CFR Part 40 materials license authorizing it to perform certain work at its now-inactive thorium ore milling facility. The Commission additionally sets forth the parties to the informal proceeding and the procedures by which it will be conducted.

ATOMIC ENERGY ACT: HEARING REQUIREMENT (MATERIALS LICENSE)

A petitioner is not entitled, under either the Atomic Energy Act or NRC regulations, to a formal, trial-type hearing on materials licensing actions. *Kerr-McGee Corp.* (West Chicago Rare Earths Facility), CLI-82-2, 15 NRC 232 (1982).

ORDER

Pending before the Commission are the petitions of the City of West Chicago (City) for a hearing on the request of Kerr-McGee Corporation (Kerr-McGee) for an amendment to the 10 CFR Part 40 license issued for its Rare Earths Facility, a now-inactive thorium ore milling facility located in West Chicago, Illinois. Currently under consideration by the agency are various proposals to decommission the facility by collecting and disposing of contaminated materials onsite. The proposed fifth amendment to the license, which was requested in letters to the NRC staff dated February 19, 1982, and May 6, 1982, has been sought, according to Kerr-McGee, for the purpose of establishing a water collection and retention system to eliminate any uncontrolled discharges to the West Chicago storm sewer system. In addition, Kerr-McGee asserts that the amendment is necessary to facilitate the siting and utilization of an incineration system for organic material volume reduction that is permitted by Amendment Nos. 2 and 4 to the license.* Specifically, to carry out these plans, Kerr-McGee requests permission to dismantle Building No. 14, which now covers the existing plant collection sump, and to raze Building No. 16, which is in the southwestern corner of the factory site where the incinerator is to be located.

In its petitions, the City has asserted that Commission regulations, the Atomic Energy Act, and the precepts of constitutional due process require the Commission to institute a formal, trial-type hearing under 10 CFR Part 2, Subpart G in which it can challenge the requested amendment. This, of course, is not the first time the Commission has been confronted with such claims from this party. The City recently sought a formal hearing to challenge another amendment to the Kerr-McGee license. In ruling on that request, *Kerr-McGee Corp.* (West Chicago Rare Earths Facility), CLI-82-2, 15 NRC 232 (1982), the Commission discussed these supposed bases for convening a formal hearing and concluded that none compelled the agency to institute such a proceeding. As we indicated in that decision, there is no statutory entitlement to a formal hearing under the Atomic Energy Act or NRC regulations with regard to materials licensing actions. Further, the City's petitions, on their face, do not give us cause to exercise our discretion and grant such a hearing under the "public interest" standard of 10 CFR §§2.104(a) and 2.105(a)(6)

*Up to this time, the agency has issued four amendments relating to the Kerr-McGee license for its West Chicago facility. Amendment No. 1, which was issued on April 24, 1981, permitted the demolition of two buildings on site. On September 28, 1981, the NRC staff issued Amendment No. 3 that authorized the dismantling of additional buildings and the receipt by Kerr-McGee of contaminated materials to be gathered by the State of Illinois from various sites located in West Chicago. Amendment No. 2, which was issued on August 11, 1981, gave agency approval to the construction by Kerr-McGee of an incinerator to reduce the volume of contaminated organic wastes generated during decommissioning activities. Several technical revisions and additions to Amendment No. 2 were made by Amendment No. 4, dated February 12, 1982.

or to find due process concerns require that a formal proceeding need be convened. As such, only an informal hearing need be instituted at this time.

In its February 1982 *West Chicago* order, after finding that only an informal hearing need be held, the Commission itself dealt with the merits of the hearing petitions of the City on the basis of its written filings and those of Kerr-McGee. However, such direct Commission involvement in each informal hearing for a materials license amendment is neither necessary nor prudent. Rather, we believe the responsibility for disposition of the hearing issues can be placed in the hands of an informal adjudicator chosen from the NRC staff. Accordingly, we direct that the Director of the Office of Nuclear Material Safety and Safeguards (NMSS), or, if the NMSS Director so designates, the NMSS Deputy Director, an NMSS Division Director or Deputy Division Director, or an NMSS Branch Chief act as the presiding officer to adjudicate those contentions that the City may assert in challenging the Kerr-McGee amendment request. The parties to the informal adjudication shall be Kerr-McGee and the City. If the presiding officer finds that additional legal or technical assistance would aid him in conducting the informal proceeding he may, with the approval of the Director of NMSS or the Executive Legal Director, designate such staff personnel as are necessary to serve as his advisors.

In carrying out his responsibility under this delegation, the presiding official shall have the authority to request and receive whatever written submissions and documents he deems necessary from Kerr-McGee and the City on any schedule he deems proper. Such requests may include requirements that the parties answer specific questions, with supporting materials, that the adjudicator poses to them. In addition, he may, in his discretion, entertain oral presentations from the parties. Any oral communications between the presiding officer, or any staff personnel assisting him, and any party concerning any matter at issue in the proceeding shall be conducted in the presence of all parties or memorialized in a written memorandum that is served on all parties and made a part of the docket file on the proceeding.

If, on the basis of the parties' presentations and other information that the adjudicator is entitled to rely upon as discussed below, the presiding officer believes that additional procedures are necessary to ensure the full development of the agency record or to resolve any material factual issues that could not be resolved through the procedures set forth in this order, he should seek authority from the Commission to implement any additional procedures.

The presiding officer's decision, which shall be in writing, shall be made on the basis of the parties' written submissions, any oral presentations, any other technical or factual information that is publicly available in the docket file, and any other matters of which he may take official notice (giving the parties an opportunity to show to the contrary). The presiding officer's decision shall become final agency action thirty days after the date of issuance unless the Commission, on its own

motion, undertakes a review of the decision. No petitions for review will be entertained by the Commission regarding the presiding officer's decision.

Commissioner Gilinsky dissents from this Order.

It is so ORDERED.

For the Commission*

John C. Hoyle
Acting Secretary of the Commission

Dated at Washington, D.C.,
this 6th day of August, 1982.

*Commissioner Gilinsky was not present when this Order was affirmed, but had previously indicated his disapproval. Had Commissioner Gilinsky been present he would have affirmed his prior vote.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gillinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of

Docket No. 50-537
(Exemption request
under 10 CFR 50.12)

UNITED STATES DEPARTMENT OF
ENERGY
PROJECT MANAGEMENT CORPORATION
TENNESSEE VALLEY AUTHORITY
(Clinch River Breeder Reactor
Plant)

August 12, 1982

The Commission considers a petition by intervenors for investigation into allegations that Applicants attempted to conceal certain crucial safety information from the Commission in connection with their application for a license for the Clinch River Breeder Reactor Plant. Upon review of the response of the Department of Energy to the allegations and to certain questions earlier posed by the Commission, the response of the NRC Staff to questions separately addressed to it, and the response of the intervenors, the Commission concludes that the allegations are without foundation. The Commission, therefore, denies the petition for investigation.

MEMORANDUM AND ORDER

On July 14, 1982, Intervenor Natural Resources Defense Council, Inc. and the Sierra Club (Intervenors) filed a "Petition For Investigation" with the Commission.¹

Intervenors' Petition contains allegations which, if true, would bear on the Applicants' application for a license.² In view of the seriousness of Intervenor's allegations, the Commission on July 21, 1982 issued an order which directed the Department of Energy (DOE) for itself and on behalf of its co-applicants, to respond to the Intervenor's allegations and to specific questions. The Commission has received DOE's response.³ The Commission's order also directed the staff to respond to certain questions and that response has been received.⁴ The Commission has also received a response from the Intervenor on its July 21, 1982 Order.⁵

Intervenors allege that there was "a concerted effort to conceal crucial safety information in a manner that calls into question the character of the CRBR Applicants" and "the Applicants' deliberate omissions call into question the fundamental reliability of the information which the Commission is using to assess the safety, environmental impact, and site suitability of the CRBR."⁶ Two documents which Intervenor obtained in the course of discovery for the CRBR licensing proceeding are cited as the bases for these allegations.⁷

Since Intervenor's allegations have their origins in and are based solely upon these two documents, obviously the Commission must initially focus on them, the

¹ Intervenor Natural Resources Defense Council, Inc. and the Sierra Club, Petition For Investigation, July 14, 1982 ("Intervenors' Petition").

² The Applicants are the United States Department of Energy, Project Management Corporation and the Tennessee Valley Authority.

³ DOE's letter of July 28, 1982, to the Commissioners ("DOE's Response").

⁴ William J. Dirks' letter, "Staff Responses to Commission Questions — Order dated July 21, 1982," July 23, 1982 ("Staff's Response").

⁵ Response of Natural Resources Defense Council, Inc. and Sierra Club dated July 26, 1982 ("Intervenors' Response").

The conclusions reached in the text (*infra*) on the Intervenor's Petition, also dispose of the proposal in Intervenor's Response that the Commission ask the Applicants and the staff to respond to additional questions.

⁶ Intervenor's Petition at pp. 1-2.

⁷ The first document is a memorandum from the then Chief of the Applicants' Licensing Branch to its Assistant Director for Public Safety dated April 6, 1977 ("the April 6, 1977 TLTM memorandum"). The acronym "TLTM" refers to "third-level thermal margins."

Intervenors quote certain excerpts from this memorandum (Intervenors' Petition at 3) as a "rather shocking attempt by the CRBR Chief of Licensing deliberately to omit crucial evidence concerning inadequacies and inconsistencies in its core melt safety analysis," and that they have "been unable to unearth any attempt by Applicants to correct the situation." (*Id.* at 4).

The second document is a memorandum from the Applicants' then Assistant Director for Engineering to its Assistant Director for Public Safety, May 27, 1977 ("the May 27, 1977 Argonne Report Memorandum"). Quoting excerpts from this memorandum (*id.* at 5-6), Intervenor asserts that it "calls unambiguously for the systematic deletion from the Argonne report of 'negative' information that would presumably interfere with the licensing of the facility." (*Id.* at 5).

context in which they were written, and on their ultimate use by DOE, in reviewing the Intervenor's Petition. The Commission, having reviewed the responses, has concluded that the Intervenor's allegations, when viewed in the totality of the circumstances relevant to the two documents, are without foundation. Therefore, the Commission concludes that no further inquiry is warranted and that the Petition For Investigation must be denied.

DISCUSSION

The Commission's initial task in responding to the Intervenor's Petition is to determine whether there are any credible grounds to support the allegations. If there are, the Commission would then have to consider the appropriate course of action to resolve the matter. The information requested by the Commission's July 21, 1982 order was designed to assist it in establishing whether the allegations have any credible foundation and, if so, in determining an appropriate course of action to resolve the matter. On the other hand, if the DOE and staff responses to that order demonstrate that the allegations are without any credible foundation, then that would be the end of the matter.

Representations in DOE's Response and in the Staff's Response which are corroborated by documents which are attached to each response convince the Commission that the Intervenor's allegations lack any credible foundation.⁸ The discussion which follows demonstrates that neither of the two documents relied on by Intervenor, as far as the Commission has been able to determine, reveals, in the totality of its context, any effort on the Applicants' part to conceal crucial safety information or to cover up anything. Other relevant documents which were actually filed with the NRC in the CRBR proceeding reveal that even if intentions of the authors of the two documents are viewed in the worst possible light, ultimately the Applicants did not withhold substantive information from the NRC.

A. The April 6, 1977 "TLTM Memorandum"

Intervenor's Petition does not reveal either the overall context in which this memorandum was written or the response which the Applicants eventually filed with the NRC. Generally, however, on its face, this memorandum reveals recommendations by a former Chief of Applicants' Licensing Branch: (1) to keep third-level thermal margin (TLTM) evaluations from becoming a Design Basis

⁸ We have also considered the Intervenor's Response. It does not, however, provide any additional basis for the allegations in Intervenor's Petition.

Accident (DBA); (2) to refuse to answer an NRC question explicitly or to report sensitivity studies; and (3) to refuse to comment on NRC's "24-hour" criteria.⁹

The general areas discussed in this memorandum concern core-disruptive accidents.¹⁰ The staff asserts it had decided on May 6, 1976 that it would not consider core-disruptive accidents to fall within the design basis accident and that continues to be the staff's position.¹¹

For its part, the DOE in its response provides specific documents which reveal: the NRC staff's request to which the April 6, 1977, memorandum related; the Applicants' actual response to the staff; and the ultimate resolution of the matter.¹² On March 30, 1977, the staff requested additional information from the Applicants and it is that request, according to DOE's Response, which prompted the April 6, 1977 memorandum.¹³

The April 6, 1977 memorandum leaves little doubt that its author objected to responding to the staff's request and to the form in which it was asked to be provided. But the documents provided by DOE and the Staff's Response show us that: the Applicants on May 9, 1977 informed the staff of their objections with regard to providing the information and the format of the response; that the staff in a May 27, 1977 letter to the Applicants adhered to its position on the need for information and for it to be in the format requested; and that eventually the Applicants provided the answers to the staff's questions.¹⁴

These documents demonstrate that there is no foundation for Petitioners' allegation that the Applicants intended to conceal information.¹⁵ Rather, the documents show that the Applicants objected to, but finally acceded to, the NRC's request for information and the requested format. We find nothing here that warrants further inquiry or other action.

⁹ The letter appears in full as Attachment A to Intervenors' Petition.

The author of the letter departed from the CRBR Project Organization on September 29, 1977 (DOE's Response at p. 1).

¹⁰ Staff's Response at p. 1.

¹¹ *Id.* at 2. This position is stated in a letter dated May 6, 1976, from Richard Denise, who at the time was the Assistant Director for Special Projects in the Division of Project Management to Mr. Caffey, who at that time was the Director of the CRBR Project. The letter is attached in its entirety to the Staff's Response.

¹² DOE's Response at p. 2.

¹³ DOE's Response at p. 3.

¹⁴ See Enclosures (A) through (E) to DOE's Response. DOE also explains that in November 1977 the staff suspended its review of the CRBR application. This suspension was not lifted until last year. On February 13, 1981, Applicants filed Amendment 60 to the PSAR which provided answers to the questions raised by the March 30, 1977 staff letter to the Applicants.

¹⁵ The staff asserts in its response that its current documentation indicates that the Applicants apparently did not implement the recommendations of the April 6, 1977 memorandum. Staff's Response at p. 2. In particular, Applicants provided sensitivity studies and answers to NRC questions.

B. The May 27, 1977 Argonne Report Memorandum

The document referred to in this memorandum is ANL/RAS 77-15 dated May 1977 entitled "An Analysis of the Unprotected Loss-of-Flow Accident in the Clinch River Breeder Reactor with an End-of-Equilibrium — Cycle Core."¹⁶ The memorandum expressed the views of the Applicants' then Assistant Director for Engineering to their then Assistant Director of Public Safety on a draft of the report being prepared by the Argonne National Laboratory.¹⁷

The staff asserts that the specific issue in the memorandum concerns recommendations in the draft Argonne report regarding a certain computer code and its application to core-disruptive accidents.¹⁸ Apparently the staff does not have a copy of the draft Argonne report in its records and was thus unable to make a direct check to determine if the recommendations in the May 27, 1977 memorandum were actually implemented by the Argonne National Laboratory.¹⁹ The staff, however, informs us that it has performed a check of the recommendations which in its judgment are susceptible to verification by use of the May 27 memorandum and the final report.²⁰ The results of the check are included in the Staff's Response. They indicate that only one recommendation in the May 27 memorandum appears to have been followed and that recommendation was to add some additional technical detail.²¹

For its part, DOE first provided general background on the memorandum such as: the Argonne National Laboratory's role in DOE's Liquid Metal Fast Breeder Reactor Safety Base Program Activities; the report's focus on the area of Hypothetical Core Disruptive Accidents; and the lead management responsibility of the Public Safety Division for that area within the CRBR Project Office.²² The Director (at that time) of that office received advice and assistance from the Engineering Division (from which the May 27, 1977 memorandum originated) to help him, according to DOE's Response, carry out his overall responsibilities.²³ In

¹⁶ Staff's Response at p. 2.

¹⁷ The then Assistant Director for Engineering departed the CRBR Project Organization on December 11, 1981. DOE's Response at p. 1. He did, however, participate in a review of Applicants' Site Preparation Activities Report submitted in support of their November 30, 1981 exemption request to the Commission. (*Id.* at 6). According to DOE, his comments primarily related to material quantities and costs. (*Ibid.*). The memorandum was actually signed by another individual whose present position is Chief, Reactor Plant Components Branch, CRBR Office. (DOE's Response at p. 1). In any event; these matters are without significance in view of our conclusion in the text (*infra*) that Intervenor's allegations based upon the May 27, 1977 memorandum are without foundation.

¹⁸ Staff's Response at p. 2.

¹⁹ *Id.* at 2.

²⁰ *Ibid.*

²¹ Staff's Response at pp. 2-3. According to the Staff, the recommendation which was apparently followed concerned "adding a description of Henry's experiments following its reference [in the Argonne Report] in support of Fauskes 'sloshing theory.'"

²² DOE's Response at p. 4.

²³ *Ibid.* It is apparent from the face of the May 27, 1977 memorandum (paragraph 1, p. 1) that it was written in response to a specific request for comments on the report from the Public Safety Division.

this regard, DOE asserts in its response that differences in understanding and objectives concerning requirements for "beyond design basis accident analysis" and for developing the relevant research specification were resolved within the Project Office prior to commenting to outside organizations.²⁴ DOE asserts that, when viewed in this context, the May 27, 1977 memorandum "does not represent the concern portrayed by the intervenors."²⁵

Although the memorandum was used by the Public Safety Division in developing the Project Office's comments to Argonne, apparently neither its author nor representatives of the Engineering Division met with Argonne representatives on its recommendations.²⁶ DOE also states that the final Argonne report was issued in July 1977, with "essentially no substantive change."²⁷ DOE also included in its response a letter dated July 20, 1982 from the individual at Argonne under whose supervision and direction the report was prepared in which he states, among other things:²⁸

"I do not recall any substantive changes being made between the draft and the final form of the report.

"I believe that this report reflected ANL's best technical judgment in the areas of LMFBR safety technology discussed in the report.

"I further believe that the report clearly states what the authors intended it to state.

"I reiterate that the comments in the referenced memorandum in question are not improper, but they did not in any way influence the technical judgment of the authors in what was ultimately presented in ANL/RAS 77-15."

Considering all of the foregoing, there is no foundation for the Intervenor's allegation based on the May 27, 1977 memorandum.

CONCLUSION

The serious allegations raised by the Intervenor on the basis of the April 6, 1977 and the May 27, 1977 memoranda are without foundation for the reasons we have

²⁴ DOE's Response at p. 4.

²⁵ DOE's Response at p. 4. Enclosure F, general comments 1 and 2 explicitly address the sections of the memorandum focused on by Petitioners.

²⁶ *Id.* at 4.

²⁷ *Id.* at 5.

²⁸ DOE's Response, Enclosure H.

considered at some length. In view of our conclusion in that regard, the petition must be denied.

It is so ORDERED.

For the Commission*

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 12th day of August, 1982.

*Commissioner Gilinsky did not participate in this decision.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

**Nunzio J. Palladino
Victor Gillinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine**

In the Matter of

**Docket No. 50-537
(Exemption request
under 10 CFR 50.12)**

**UNITED STATES DEPARTMENT
OF ENERGY
PROJECT MANAGEMENT CORPORATION
TENNESSEE VALLEY AUTHORITY
(Clinch River Breeder Reactor
Plant)**

August 17, 1982

The Commission grants in part and denies in part the Department of Energy's request for an exemption pursuant to 10 CFR 50.12 from the provision of 10 CFR 50.10(c) prohibiting the commencement of certain site or construction work prior to obtaining a construction permit or Limited Work Authorization. The Commission authorizes the applicants to conduct non-safety related site preparation activities in connection with the Clinch River facility but denies the exemption request as it pertains to safety-related activities.

**REGULATIONS: PRE-CONSTRUCTION PERMIT/LIMITED WORK
AUTHORIZATION ACTIVITY**

10 CFR 50.10(c) generally prohibits any person from clearing or excavating a nuclear power reactor site or otherwise commencing construction of a nuclear

power reactor until a construction permit or a limited work authorization has been obtained following the holding of an adjudicatory hearing.

REGULATIONS: EXEMPTIONS

10 CFR 50.12(a) provides for the case-by-case granting of exemptions from the prohibition of 10 CFR 50.10(c) if specified criteria are met.

REGULATIONS: EXEMPTIONS

The Commission may apply 10 CFR 50.12 to a "first of a kind" project: there is no indication in the regulations or past practice that exemptions for conduct of site preparation activities are to be confined to typical, commercial light water nuclear power reactors or that an exemption can be granted only if a limited work authorization under 10 CFR 50.10(e)(1) and (2) ("LWA-1") can also be granted or only if justified to meet electrical energy needs.

COMMISSION PROCEEDINGS: RES JUDICATA/COLLATERAL ESTOPPEL

The common-law rules regarding *res judicata* do not apply, in a strict sense, to administrative agencies.

COMMISSION PROCEEDINGS: RES JUDICATA/COLLATERAL ESTOPPEL

Res judicata need not be applied by an administrative agency where there are overriding public policy interests which favor relitigation.

COMMISSION PROCEEDINGS: RES JUDICATA/COLLATERAL ESTOPPEL

When an agency decision involves substantial policy issues, an agency's need for flexibility outweighs the need for repose provided by the principle of *res judicata*.

COMMISSION PROCEEDINGS: RES JUDICATA/COLLATERAL ESTOPPEL

A change in external circumstances is not required for an agency to exercise its basic right to change a policy decision and apply a new policy to parties to whom an old policy applied.

COMMISSION PROCEEDINGS: RES JUDICATA/COLLATERAL ESTOPPEL

An agency must be free to consider changes that occur in the way it perceives the facts, even though objective circumstances remain unchanged.

ATOMIC ENERGY ACT: RIGHT TO HEARING

For there to be any right to a hearing under Section 189a. of the Atomic Energy Act on the grant of an exemption, such a grant must be part of a proceeding for the granting, suspending, revoking, or amending of a license or construction permit under the Atomic Energy Act.

ATOMIC ENERGY ACT: REQUIREMENT OF LICENSE HEARING

The Atomic Energy Act does not require a license or a construction permit, or an adjudicatory hearing, on site preparation activities.

NEPA: REQUIREMENT OF HEARING

The Commission is not required by NEPA to hold formal hearings on site preparation activities because NEPA did not alter the scope of the Commission's jurisdiction under the Atomic Energy Act. *Gage v. United States Atomic Energy Commission*, 479 F.2d 1214, 1220 n.19 (D.C. Cir. 1972); 39 *Fed. Reg.* 14506, 14507 (April 24, 1979).

REGULATIONS: EXEMPTIONS

10 CFR 50.12(a) provides that any exemption from the licensing requirements of 10 CFR Part 50 must be authorized by law, not endanger life or property or the common defense and security, and be in the public interest. For an exemption from 10 CFR 50.10, the Commission considers the public interest by weighing the factors set out in 10 CFR 50.12(b).

REGULATIONS: EXEMPTIONS

An exemption from Commission regulations must be consistent with the Atomic Energy Act, the National Environmental Policy Act, and other applicable law.

REGULATIONS: EXEMPTIONS (EARLY SITE PREPARATION)

The limited work authorization procedure under 10 CFR 50.10(e)(1) and (2) ("LWA-1") and the 10 CFR 50.12(b) exemption procedure are independent avenues for applicants to begin site preparation in advance of receiving a construction permit.

NEPA: AGENCY RESPONSIBILITIES

The National Environmental Policy Act (NEPA) requires that the Commission prepare an environmental impact statement only for major actions significantly affecting the environment.

NEPA: SEGMENTATION

A federal agency may consider separately under NEPA the different segments of a proposed federal action under certain circumstances. Where approval of the segment under consideration will not result in any irreversible or irretrievable commitments to remaining segments of the proposed action, the agency may address the activities of that segment separately.

REGULATIONS: EXEMPTIONS

The public interest criterion for granting an exemption from 10 CFR 50.10, under 10 CFR 50.12(b), is a stringent one: exemptions of this sort are to be granted sparingly and only in extraordinary circumstances.

MEMORANDUM AND ORDER

I. INTRODUCTION

This decision concludes the Commission's consideration of the Department of Energy's most recent request for an exemption from 10 CFR 50.10 pursuant to 10

CFR 50.12 to initiate site preparation and to perform limited safety-related activity with regard to the Clinch River Breeder Reactor. For the reasons discussed below, the Commission has determined that the exemption should be granted in part and denied in part.

II. BACKGROUND

A. PROJECT HISTORY

The Department of Energy (DOE), the Project Management Corporation and the Tennessee Valley Authority (Applicants) have proposed to construct a demonstration liquid metal fast breeder reactor, to be known as the Clinch River Breeder Reactor (CRBR), on a site adjacent to the Clinch River Industrial Park near Oak Ridge, Tennessee. Other nuclear facilities in the area are the Oak Ridge Gaseous Diffusion Plant, the Oak Ridge National Laboratory, and the Y-12 military facility.

Applicants applied to the Nuclear Regulatory Commission (NRC or Commission) for a construction permit for CRBR in 1975. Soon thereafter, the Commission initiated an adjudicatory proceeding on the application. Applicants requested, as a first step in that proceeding, that the presiding Atomic Safety and Licensing Board schedule hearings and issue a partial initial decision on environmental and site suitability issues in support of issuance of a limited work authorization for site preparation activities (a so-called "LWA-1"). However in 1977, before the proceeding progressed to the evidentiary hearing stage for the LWA-1, the proceeding was suspended at Applicants' request following an announcement by the Executive Branch that it was opposed to the CRBR project. The change of Administration in 1981 led to a new Executive Branch policy in favor of CRBR. On November 30, 1981 DOE, for itself and the other Applicants, requested the Nuclear Regulatory Commission to authorize initiation of site preparation activities for the CRBR prior to the issuance of a construction permit or limited work authorization by granting an exemption from 10 CFR 50.10(c) pursuant to 10 CFR 50.12. At about the same time the Licensing Board, acting in response to an unopposed request by Applicants, resumed the adjudicatory proceeding on the CRBR construction permit application.

10 CFR 50.10(c) of the Commission's regulations generally prohibits any person from clearing or excavating the site or otherwise commencing construction of a nuclear power reactor until either a construction permit or an LWA has been obtained following the holding of an adjudicatory hearing. However, 10 CFR 50.12(b) provides for the case-by-case granting of exemptions from this prohibition if specified criteria are met.¹ On March 16, 1982 the Commission denied the

¹ These criteria will be discussed in more detail below.

exemption request by a divided vote, CLI-82-4, 15 NRC 362 (1982), and, on May 18, 1982, denied reconsideration. CLI-82-8, 15 NRC 1095. Subsequently, Applicants submitted a new exemption request on July 1, 1982. This latest request asked authorization for some limited safety-related construction activities in addition to the non-safety related site preparation activities that were the subject of the earlier request.

Applicants' proposed site preparation activities include site clearing and grading, excavation and quarry operations, the construction of temporary construction-related facilities, a barge facility, an access road and a railroad spur, and the installation of services including power, water, sewerage, and fire protection. Applicants also propose to install some emergency plant service water piping that is part of the safety-related emergency service water system for the plant. Applicants described the various proposed site preparation activities and estimated the environmental impacts of these activities in a Site Preparation Activities Report (SPAR) that accompanied the application. Most of the proposed work does not involve safety-related structures, systems, or components subject to the Commission's safety regulations in 10 CFR Part 50.

Applicants' request was opposed by the Natural Resources Defense Council, Inc. and the Sierra Club (Intervenors), intervenors in the separate construction permit proceeding.

B. PROCEDURAL HISTORY

The Commission decided here to use informal procedures to determine for itself the merits of the exemption request. Similar informal procedures were followed in denying Applicants' first exemption request. These procedures provided an opportunity for the parties to the construction permit proceeding, government agencies, and other interested persons to file written comments with the Commission. Applicants were also asked to respond to specific Commission questions. Subsequently, the Commission conducted an oral proceeding at which presentations were made by all commentors who responded to the Commission's invitation to appear. Finally, the Commission met in public session to decide whether to grant the exemption.

Filings in favor of the exemption were received from the Governor of Tennessee, the Mayor of Oak Ridge, Tennessee, Scientists and Engineers for Secure Energy, several equipment vendors, a society of professional engineers, and many members of the public. Filings opposing the exemption were received from the Intervenors, the Attorney General of Tennessee, the Union of Concerned Scientists (UCS), and many members of the public. The bulk of the filings supported grant of the exemption. The various views presented in these filings were analyzed in a publicly available report by the Commission's Office of Policy Evaluation. (OPE Report.)

On July 29, 1982 the Commission conducted a day-long oral proceeding on the request. Presentations in favor of the exemption were made by the Applicants, a representative of the Governor of Tennessee, the Mayor of the City of Oak Ridge, Tennessee, and Dr. Miro Todorovich for Scientists and Engineers for Secure Energy. Presentations opposing the exemption were made by the Intervenor, a representative of the Attorney General of Tennessee, Mr. Michael Faden for UCS, and Mr. Theodore Taylor. On August 5, 1982 the Commission met in public session to reach a decision. As indicated, the Commission decided to grant the exemption in part and to deny it in part. The reasons for this decision are set forth below.

III. COMMISSION ACTION ON THE EXEMPTION REQUEST

A. THE CRITERIA

A request for an exemption from any Commission regulation in 10 CFR Part 50, including the general prohibition on commencement of construction in 10 CFR 50.10(c), may be granted under 10 CFR 50.12(a), which provides that:

The Commission may, upon application by any interested person or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest. 10 CFR 50.12(b) provides more detailed regulatory guidance regarding the content of the "public interest" criteria in 10 CFR 50.12(a) as it applies to requests for exemptions from 10 CFR 50.10(c). Under 10 CFR 50.12(b) whether grant of an exemption would be in the public interest depends on consideration and balancing of the following factors:

- (1) Whether conduct of the proposed activities will give rise to a significant adverse impact on the environment and the nature and extent of such impact, if any;
- (2) Whether redress of any adverse environment impact from conduct of the proposed activities can reasonably be effected should such redress be necessary;
- (3) Whether conduct of the proposed activities would foreclose subsequent adoption of alternatives; and
- (4) The effect of delay in conducting such activities on the public interest, including the power needs to be used by the proposed facility, the availability of alternative sources, if any, to meet those needs on a timely basis and delay costs to the applicant and to consumers.

Issuance of such an exemption shall not be deemed to constitute a commitment to issue a construction permit. During the period of any exemption granted pursuant to this paragraph (b), any activities conducted shall be carried out in such a manner as will minimize or reduce their environmental impact.

Each of the elements in 10 CFR 50.12(a) and (b) will be considered in some detail below.

B. THE REQUEST TO CONDUCT SAFETY-RELATED ACTIVITIES

With one exception, DOE's exemption request does not involve any safety-related construction activities. The exception is the request for permission to construct emergency plant service water piping that is part of the safety-related emergency service water system for the plant. The Commission believes, as a matter of policy for the CRBR program, that safety-related activities should not be permitted prior to the completion of an adjudicatory hearing for CRBR. For this reason, the Commission denies this portion of DOE's exemption request.

C. PROCEDURAL ISSUES RELATED TO THE REQUEST TO CONDUCT NON-SAFETY SITE PREPARATION ACTIVITIES

Before addressing the merits of this part of the exemption request, it is first necessary to address intervenors' contentions that: (1) the Commission may not apply 10 CFR 50.12 to this project; (2) Commission consideration of DOE's exemption request is barred by the principle of *res judicata*; and (3) an adjudicatory hearing is required on an exemption request. The Commission rejects each of these arguments for the reasons stated below. It does not address these arguments in connection with the request to conduct the safety-related activities because its denial of that request moots the arguments.

1. Availability of an Exemption

Intervenors contend that the Commission may not apply 10 CFR 50.12 to a first of a kind project such as CRBR. We disagree. There is no indication in 10 CFR 50.12 that exemptions for conduct of site preparation activities are to be confined to typical, commercial light water nuclear power reactors. Commission practice under 10 CFR 50.12 has been to consider each exemption request on a case-by-case basis under the applicable criteria in the regulation. There is no indication in the regulations or past practice that an exemption can be granted *only* if an LWA-1 can also be granted or only if justified to meet electrical energy needs.

2. Res Judicata

Intervenors contend that the Commission's consideration of the merits of DOE's second exemption request is barred by the principle of *res judicata*. For the reasons discussed below, the Commission finds that *res judicata* does not apply to this proceeding.

Res judicata is a judicially created rule for limiting parties from relitigating matters that have been previously determined by the courts. Generally, *res judicata* precludes parties, or their successors in interest, from bringing again to a court the same cause of action as one previously determined on the merits. The principal bases of *res judicata* are the need for finality, the protection of one party from harassment by another, and the conservation of judicial resources. Balanced against these policy considerations are the need for flexibility to implement new policy initiatives and the possibility of a more accurate decision through further proceedings. In applying *res judicata*, courts have usually controlled relitigation by exercising their discretion to balance the competing policy considerations through various definitions of either what constitutes the same cause of action or who are successors in interest to parties. In addition, courts have developed exceptions to the rule of *res judicata*. Material changes in fact or law have operated to preclude the *res judicata* effect of a decision. *Commissioner v. Sunnen*, 333 U.S. 591, 599-600 (1948). Moreover, the common law rules regarding *res judicata* do not apply, in a strict sense, to administrative agencies. *Res judicata* need not be applied by an administrative agency where there are overriding public policy interests which favor relitigation. *International Harvester Company v. Occupational Safety and Health Review Commission*, 628 F.2d 982, 986 (7th Cir. 1980).

In particular, when an agency decision involves substantial policy issues, an agency's need for flexibility outweighs the need for repose provided by the principle of *res judicata*. *Maxwell v. N.L.R.B.*, 414 F.2d 477, 479 (6th Cir. 1969). See, also, *FTC v. Texaco*, 555 F.2d 867, 881 (D.C. Cir. 1977); *cert. denied*, 431 U.S. 974 (1977) *rehearing denied*, 434 U.S. 883 (1977) at 893-94 (concurring opinion per Leventhal, J.). Moreover, a change in external circumstances is not required for an agency to exercise its basic right to change a policy decision and apply a new policy to parties to which an old policy applied. *Maxwell v. N.L.R.B.*, *supra* at 479. An agency must also be free to consider changes that occur in the way it perceives the facts, even though the objective circumstances remain unchanged. *Maxwell, supra, id.*; *FTC v. Texaco, supra* at 874 (concurring opinion per Leventhal, J.) This is especially important here where the weighing of factors is largely a matter of individual perception. Indeed, the Commission's last decision on the exemption request contained five separate views, one by each Commissioner.

For the above reasons, the Commission has discretion not to apply the principle of *res judicata* to this exemption request and has chosen not to apply it.

3. Adjudicatory Hearing

We turn next to Intervenor's contention that the Commission must conduct an adjudicatory proceeding on DOE's request for an exemption. Section 189a. of the Atomic Energy Act of 1954, as amended (the Atomic Energy Act), provides for a hearing in "any proceeding under this Act, for the granting, suspending, revoking or amending of any license or construction permit." For the reasons discussed below, the Commission has determined that this provision does not apply to this proceeding on an exemption request.

It is the first sentence of section 189a. which requires a hearing at the request of any interested person in any proceeding under the Atomic Energy Act "for the granting, suspending, revoking, or amending of any license" or construction permit. The legislative history of that sentence indicates that the language was chosen deliberately to define which categories of agency action did not entail any hearing rights. 100 *Cong. Rec.* 10181 (July 16, 1954). Thus, for there to be any statutory right to a hearing on the granting of an exemption, such a grant must be part of a proceeding for the granting, suspending, revoking, or amending of any license or construction permit under the Atomic Energy Act.

However, the Act neither defines construction for which a license or permit must be obtained nor indicates which activities can be considered as preparation for construction and allowable without a license or construction permit. Accordingly, the Atomic Energy Commission construed the Atomic Energy Act as providing the Commission with discretion to determine which activities may take place prior to issuance of a license or construction permit. *Carolina Power and Light Company* (Shearon Harris Nuclear Power Plant, Units 1, 2, 3 and 4), CLI-74-22, 7 AEC 939 (1974). The Commission has consistently construed the Act so as not to require a license or a construction permit, or an adjudicatory hearing, on site preparation activities.

Moreover, the Commission is not required by NEPA to hold formal hearings on these activities because NEPA did not alter the scope of the Commission's jurisdiction under the Atomic Energy Act. *Gage v. United States Atomic Energy Commission*, 479 F.2d 1214, 1220 n.19 (D.C. Cir. 1972); 39 *Fed. Reg.* 14506, 14507 (April 24, 1979).

D. THE MERITS OF THE REQUEST PERTAINING TO NON-SAFETY RELATED SITE PREPARATION ACTIVITIES

Section 50.12(a) provides that any exemption from the requirements in 10 CFR Part 50 must be authorized by law, not endanger life or property or the common defense and security, and be in the public interest. As stated above, for an exemption from 10 CFR 50.10, the Commission considers the public interest by weighing the factors set out in 10 CFR 50.12(b). For the reasons discussed below, the Commission finds that an exemption would be authorized by law, will not endanger life or property or the common defense and security, and will be in the public interest.

1. An Exemption Would Be Authorized by Law

An exemption from Commission regulations must be consistent with the Atomic Energy Act, the National Environmental Policy Act, and other applicable law. For the reasons discussed below, the Commission finds, as Section 50.12(a) requires, that the requested exemption would be authorized by law.

a. Atomic Energy Act

The Intervenor contend that the grant of an exemption would foreclose at least two of their contentions in the CRBR construction permit proceeding and thus deprive them of their statutory right under section 189a. of the Atomic Energy Act to an adjudicatory hearing on these contentions. The contentions in question involve:

- (1) alleged inapplicability of the LWA procedure to a first-of-a-kind reactor; and
- (2) site-suitability of the proposed CRBR site.

Regarding the first contention, Intervenor allege that granting the exemption would permit Applicants to perform the activities that would be permitted under an LWA-1 and, thus, foreclose the issue of applicability of the LWA-1 procedure. As for site-suitability, Intervenor acknowledge that the Licensing Board might be able to consider this issue objectively after grant of an exemption. However, Intervenor believe that the risk of even minimally preempting that decision is not warranted in light of the highly controversial nature of the site-suitability issue.²

² Intervenor also contend that *Sholly v. United States Nuclear Regulatory Commission*, 651 F.2d 780 (D.C. Cir.), cert. granted, 451 U.S. 1016 (1981) (*Sholly*) precludes the Commission from modifying procedures in a licensing proceeding in a manner that would foreclose a party's contentions. This
(Continued)

Applicants contend that grant of the exemption will not foreclose Commission consideration of Intervenor's contentions. They note their intention to seek a Limited Work Authorization-2 (LWA-2) pursuant to 10 CFR 50.10(e)(3)(i)-(ii). In determining whether to issue an LWA-2, the Licensing Board will also have to consider as a prerequisite condition all findings necessary for an LWA-1. Among the findings necessary for grant of an LWA-1 is a determination that the proposed site is a suitable location for a reactor of the general size and type proposed. Applicants therefore believe that grant of an exemption will not foreclose adjudication of either the ultimate legal issue of the applicability of an LWA-1 to CRBR or of site-suitability issues.

As the Commission interprets its regulations, the LWA-1 procedure and the 10 CFR 50.12(b) exemption procedure both provide independent avenues for Applicants to begin site preparation in advance of receiving a construction permit. Therefore, the availability of the exemption procedure for the CRBR does not depend on whether or not an LWA-1 would also be available. In that sense, the Intervenor is correct that granting the exemption would remove from the CRBR proceeding the specific issue of LWA-1 availability, by making the question moot. But this result would in no way interfere with Intervenor's hearing rights on the issue of whether CRBR should be constructed. It would simply enable the proceeding to reach a particular intermediate stage by an alternative route.

The Commission agrees with the Applicants that the granting of an exemption would not foreclose adjudication of Intervenor's contention regarding the issue of site-suitability. The grant of an exemption involves a balancing of the factors specified in 10 CFR 50.12(b). These factors do not include a determination of the suitability of the site. These issues will be considered separately in conjunction with Applicants' application for the construction permit or its anticipated application for an LWA-2. Therefore, even though grant of the exemption would permit Applicants to perform the site preparation activities usually permitted under an LWA-1, the legal issues of site-suitability for a project like CRBR will still have to be considered, either in connection with the Applicants' request for an LWA-2 or for the construction permit itself.³

argument is without merit. *Sholly* addressed the issue of the Commission's need to offer an opportunity for a prior hearing on a proposed license amendment that the staff determined would present no significant hazards consideration. This case does not involve an application for a license amendment. Thus, *Sholly* has no relevance to the issue presented here.

³ Intervenor also contended that the Licensing Board will be foreclosed from objectively evaluating the adequacy of the NRC staff's NEPA review for CRBR because the Commission, in granting the exemption, will have had to make a preliminary finding of NRC compliance with NEPA. The Commission believes there will be no such foreclosure for the following reasons. First, as discussed below, it is not necessary for the Commission to consider in detail the adequacy of the entire FES in order to grant the exemption. Second, the Commission's tentative findings regarding the apparent adequacy of the FES are similar to a court's preliminary determination of the legal merits of a stay request. Just as such a preliminary determination by a court does not foreclose a court's later consideration of the merits of the case, so, too, the Commission's preliminary evaluation here does not foreclose the Licensing Board's later full consideration of the adequacy of the FES.

b. National Environmental Policy Act

The National Environmental Policy Act (NEPA) requires that the Commission prepare an environmental impact statement only for major actions significantly affecting the environment. The NRC issued a Final Environmental Statement (FES) for CRBR in 1977. The FES concluded that site-preparation activities would not cause a significant environmental impact (9-23). The FES was updated by a draft supplement issued for comment in July 1982 (Suppl. FES) NUREG-0139, Suppl. No. 1 (1982). In the supplement to the FES, the NRC staff reiterated its conclusion that site preparation activities will have an insignificant effect on the environment. Therefore, the activities which will go forward on the basis of the requested exemption need not be addressed in a separate impact statement. Moreover, site preparation will not foreclose alternatives to the CRBR project. Accordingly, the Commission has concluded that all NEPA prerequisites to granting the exemption have been met.

Intervenors contend that the Commission cannot consider site-preparation activities separately from the CRBR project. They believe that NEPA prohibits an agency from going ahead with any part of a project without a complete environmental analysis of the whole project.⁴ The Commission disagrees. It is well established that there are circumstances in which a federal agency may consider separately the different segments of a proposed federal action. The Commission has concluded that site preparation activities for CRBR may reasonably be addressed separately. The key point for this conclusion is that site preparation as proposed will not result in any irreversible or irretrievable commitments to the remaining segments of the CRBR project. Cf. *Kleppe v. Sierra Club*, 427 U.S. 390 (1976); *Sierra Club v. Froehlke*, 534 F.2d 1289 (8th Cir. 1976); *Conservation Society of Southern Vermont v. Secretary of Transportation*, 531 F.2d 637 (2d Cir. 1976). Although some of the site preparation activities, such as excavation for foundations, may not have a utility independent of the rest of the CRBR project, the environment will not be significantly harmed even if the project is not ultimately completed, since the site preparation impacts are substantially redressable.

⁴ Intervenors also argue that the site preparation activities alone may result in significant adverse impacts and therefore constitute major federal action significantly affecting the quality of the human environment. Accordingly, Intervenors contended that the NRC must prepare an FES specifically for these proposed activities. Contrary to this view, both the Applicants and the NRC staff have exhaustively reviewed the environmental impacts of the proposed site preparation activities and have found that those activities will not result in significant environmental impacts. Accordingly, there is no substantial question as to whether the proposed activities will result in significant environmental impacts. The NRC staff has also determined that the environmental impacts of the site-preparation activities can be effectively redressed. OPE, in its publicly available report of June 28, 1982 to the Commission, reported that affected areas of the site could be restored essentially to their present conditions of vegetation and animal life. Perfect restoration of the topography could not be achieved, but the topography of the site is in no way unusual or distinctive.

Intervenors argue that even if the Commission should determine that site preparation activities could be considered as a separate matter, the NRC still could not rely on the Site Preparation Activities Report (SPAR) submitted by the Applicants but would have to prepare an independent NRC analysis. In fact, the NRC has independently analyzed the impacts of site-preparation. In 1977 the NRC staff took the requisite "hard look" at environmental impacts that will result from the proposed site-preparation activities and found those impacts would be insignificant. 1977 FES at 9-23. The NRC staff also has evaluated the changes in environmental impacts associated with Applicants' modified proposals for site preparation activities and found no significant changes from the impacts as previously assessed. Suppl. FES at 4-29. Thus, there is no need for additional NRC analysis devoted especially to site preparation.⁵

2. Grant of the Exemption Would Not Endanger Life or Property or the Common Defense and Security

The Commission finds that the grant of this exemption cannot endanger life or property or the common defense and security because the scope of the proposed site preparation activities does not include any safety-related work. Some participants contend that going forward with the breeder reactor program would increase the threat of a nuclear war and complicate non-proliferation problems. These allegations are irrelevant at this time because initiation of site preparation activities will not lead directly to the production of plutonium or commit the Commission to authorize construction of CRBR. Accordingly, the Commission finds that initiation of the non-safety construction activities proposed by the Applicants will not endanger life or property or the common defense and security.

3. Grant of the Exemption Is in the Public Interest

To determine whether the public interest warrants the initiation of site preparation activities under an exemption from 10 CFR 50.10, the Commission considers

⁵ In determining to seek public comment on the supplement to the Project FES, the staff identified seven items for which there was significant new information. Of these items, only two are related to site preparation activities. One addresses aquatic impacts and the other addresses tax revenues from the incoming worker population. Staff found that the new information on aquatic impacts did not change its conclusions on the significance of those impacts (Suppl. FES at 4-7), and that the new information on tax revenues now showed that revenues generated would be sufficient to cover the local costs of increased educational expenditures (Suppl. FES at 4-25). On August 16, 1982, the NRC provided the U.S. Fish and Wildlife Service with a biological assessment which concluded that the proposed construction of CRBR would not affect any of the listed species or critical habitats and is not likely to jeopardize the continued existence of proposed species or result in the destruction or adverse modification of any critical habitat proposed for such species. This constitutes compliance with the Endangered Species Act of 1973. Under these circumstances, we believe that had site preparation activities been considered separately, there would have been no need to circulate for comments the parts of the FES addressing only site-preparation impacts prior to acting on the exemption request.

the factors in 10 CFR 50.12(b). Past Commission practice also suggests that exemptions of this sort are granted sparingly and only in extraordinary circumstances. *E.g.*, *Washington Public Power Supply System* (WPPSS Nuclear Power Project Nos. 3 and 5), CLI-77-11, 5 NRC 719 (1977). The public interest criterion is therefore a stringent one. For the reasons discussed below, the Commission finds that the public interest favors an exemption in this extraordinary case.

a. Only Insignificant Environmental Impacts Will Result from Site Preparation Activities

10 CFR 50.12 (b)(1) provides for consideration of the environmental impact of site preparation activities.

Applicants' proposed site preparation activities are the usual types of activities associated with any industrial development. Although the scope of these activities is somewhat greater than those previously proposed and analyzed in the NRC's 1977 FES, Applicants provided a Site Preparation Activities Report (SPAR) which concludes that there are no significant additional impacts beyond those associated with the previous proposal. In the 1977 FES, the NRC concluded that the proposed site preparation activities would not result in significant environmental impacts. Recently, in the 1982 Draft Supplement to the FES the NRC evaluated the impacts of the Applicants' currently proposed activities, determined that they will not result in significant additional environmental impacts beyond those already described in the previous FES, and concluded that no significant physical impacts would result from site preparation activities.

In the 1977 FES and the 1982 Draft Supplement the NRC considered construction impacts on land and water use, terrestrial and aquatic ecological impacts, dust and noise, and socio-economic effects on the community. FES, Chapter 4; Suppl. FES, Chapter 4. In the Supplement, the staff found that physical impacts would not differ significantly from those described in the 1977 FES. As for socio-economic impacts, the staff found that revenues generated by the inmoving worker population would be more than sufficient to cover the costs of increased educational expenses. Staff also listed twenty commitments by the Applicants for limiting construction impacts. These included limits on waste disposal, burning, dust control, erosion control and reclamation of land. Staff believes that these measures will help keep adverse construction impacts to the minimum practicable level.

The OPE Report independently reviewed the environmental impacts that could result from the proposed site preparation activities. This review included impacts on: land and water use, terrestrial biota, and aquatic biota. The OPE Report also considered the impacts of dirt and noise and the disposal of wastes and chemicals as well as socio-economic impacts. The OPE Report concluded in general that the various impacts due to site preparation activities as proposed to be modified would

not alter the staff's previous conclusion that such activities would have insignificant environmental impact. For example, the OPE Report found that although the number of acres to be cleared had increased from the 185 acres stated in the 1977 FES to 292 acres, only 113.5 acres would be covered by permanent facilities while the rest would be revegetated. Thus, the loss of the biota at the site would be insignificant because there are thousands of similarly forested acres in the vicinity. Regarding aquatic impacts, the OPE Report stated that the use of drainage ditches and the collection of drainage water in settling basins prior to discharge will keep these impacts small. Moreover, construction of the barge facility will involve substantially less dredging than assumed in the FES. Any benthic communities disturbed or eliminated by the dredging are expected to recover rapidly after construction. Socio-economic impacts will be less than those evaluated in the 1977 FES because the site preparation work force will be substantially smaller than the construction work force. The impacts of the disposal of chemicals and other wastes were evaluated in the 1977 FES and determined to be insignificant.

The Commission finds for the purposes of this exemption request that the OPE Report and the 1982 Draft Supplement to the FES present an adequate evaluation of the adverse impacts expected to result from the proposed site preparation activities. Moreover, the changes in impacts associated with the changes in site preparation activities from those described in the 1977 FES appear insignificant enough to permit a reasonable determination of the insignificance of environmental impacts prior to the receipt and analysis of comments on the 1982 Draft Supplement to the FES. Further, when evaluated in the context of the land-use pattern authorized by local authorities, the insignificance of the environmental impacts is particularly apparent because the entire area is zoned for industrial development. *Maryland-National Capital Park and Planning Commission v. Postal Service*, 487 F.2d 1029, 1036-37 (D.C. Cir. 1973). For these reasons, the Commission finds, for the purposes of this exemption request, that the environmental impacts of site preparation activities will be insignificant.

b. Impacts from Site Preparation Activities Are Redressable

10 CFR 50.12(b)(2) provides for consideration of the redressability of site preparation activities.

Applicants contend that the site can be substantially returned to its original condition. Modern construction techniques are adequate to restore disturbed landscape. Applicants also note that because the site is zoned for industrial use, full redress may not be necessary to minimize environmental impacts. All alternative uses proposed for the area involve site clearing, road construction, railroad service, and water and sewer lines. Applicants estimate that the site can be restored for a modest cost. Of course, the cost of redress is reduced if the site improvements

related to industrial use are retained. The Applicants have committed themselves to completely redress the site, if necessary.

The OPE Report finds that the affected areas of the site could be restored essentially to their present conditions of vegetation and animal life after some time, but that perfect restoration of the topography could not be achieved. The OPE Report has also independently estimated the costs of redress by using the 1982 Dodge publications for construction costs and confirmed the costs of seven million dollars as estimated by Applicants.

Based on this record, the Commission finds that the site preparation activities could be substantially redressed, if necessary. These activities involve standard construction techniques and there is no reason to believe they cannot be implemented at this site. Moreover, the cost of redress, approximately \$7 million, is not prohibitive, especially in comparison to the other costs associated with this project.

c. Reasonable Alternatives Will Not Be Foreclosed

10 CFR 5¹.12(b)(3) provides for consideration of the foreclosure of alternatives that would result from initiating site preparation activities.

Intervenors believe that the expenditure of approximately \$80 million on site preparation will result in momentum favorable to the project and, thus, foreclose the NRC's objective consideration of alternatives. Applicants contend that the grant of an exemption will not foreclose design alternatives because no permanent construction activities have been proposed. Applicants further contend that a reasonable range of alternative site uses would be preserved since the site can be restored substantially to its original condition. Applicants also believe that the alternative of abandonment will be preserved because the costs of the proposed activities are a small fraction of the costs already incurred. Similarly, Applicants believe that grant of the exemption will not prejudice the ultimate NEPA cost/benefit balance or constitute an irretrievable commitment of resources because the cost of site preparation is a small fraction of the total project cost.

The OPE report acknowledges that site preparation costs are a substantial amount of money in absolute terms, but states OPE's opinion that these costs are so small a percentage of the project costs that site preparation would not tip the cost/benefit balance so as to foreclose the consideration of alternatives. Moreover, because no permanent plant structures are to be constructed, OPE believes that site preparation will not foreclose design alternatives.

The Commission believes that the OPE analysis is correct. Site preparation activities are too small a fraction of overall project activities to significantly affect the Commissioner's future consideration of alternative sites or abandonment of the project, and CRBR design alternatives will not be foreclosed because no permanent plant structures are to be constructed.

d. Delay Would Be Contrary to the Public Interest

10 CFR 50.12(b)(4) provides for the consideration of the impact of delay on the public interest. Applicants have identified several adverse effects that will result from delay in initiating construction of CRBR. These include: (1) failure to implement the national policy in favor of expeditious completion of CRBR; (2) undue hardship including (i) delay in the acquisition of information important to further progress in the LMFBR base research and development program (base R&D program), the LMFBR fuel cycle program and the Large Development Plant (LDP); (ii) loss of coordination between CRBR, the base R&D program and the LDP; and (3) additional costs. Intervenor contend that the delay resulting from denial of the exemption request would not adversely affect the public interest because denial of the exemption would implement the objective of demonstrating the licensability of CRBR. Moreover, they questioned the existence of any policy that would favor the granting of an exemption and questioned the validity of Applicants' estimates of delay costs. For the reasons discussed below, the Commission finds that the public interest would be adversely affected by further delay in the CRBR program.

(1) National Policy

Applicants believe that there is a clear national policy favoring expeditious completion of CRBR. Accordingly, they contend that failure to grant the exemption would result in delay in CRBR which would be contrary to the public interest in implementing national policy.

First, applicants find that the Omnibus Budget Reconciliation Act of 1981 includes a Congressional expression of intent for expeditious project completion. Pub. L. No. 97-35. That Act provided funding for the CRBR in Fiscal Year 1982. The Conference Report accompanying that Act addressed the schedule for CRBR as follows:

The conferees intend that the plant should be constructed in a timely and expeditious manner, so that a decision on the commercialization and deployment of breeder reactors can be made on the basis of information obtained in the operation of the plant.

H.R. Rep. No. 97-208, 97th Cong., 1st Sess. (1981).

The Conference Report language was explained by the floor managers of the bill in both the House and Senate. On the House floor, Congresswoman Bouquard stated:

The conferees' choice of the words "*timely*" and "*expeditious*" were purposely chosen with the intent that licensing, construction, and other related project activities be undertaken promptly and with as little delay as discretion will allow. In the same sentence the phrase "so that a decision on

commercialization and deployment of breeder reactors can be made on the basis of information obtained in the operation of the plant" in conjunction with the words "timely" and "expeditious" means that the effect of unrecoverable delays resulting from the 1977 decision to stop the project should be minimized and that to the maximum extent possible the overall liquid metal fast breeder reactor program should proceed in accordance with the pre-April 1977 project schedule. (Emphasis added)

127 Cong. Rec. H5817-18 (1981). She also noted that:

The conferee's intent is clear on this project, that the DOE should move ahead with all deliberate speed and I trust the administration will obtain the cooperation of other agencies in seeing that construction will go ahead at a significant pace. (Emphasis added)

Id.

In the Senate, a colloquy between Senators McClure and Domenici establishes that the Conference Committee's intent was that construction of the CRBR be undertaken as expeditiously as possible to minimize the effects of unrecoverable delays from the 1977 decision to stop the project. 127 Cong. Rec. S8958 (1981).

Second, Applicants argue that the President's October 8, 1981 policy statement directed government agencies to proceed with the demonstration of breeder reactor technology, including CRBR. 17 *Weekly Compilation of Presidential Documents*, 1101-12 (1981). Third, Applicants state that DOE has recently supplemented its Environmental Impact Statement for the Liquid Metal Fast Breeder Reactor Program, and on the basis of this document, has concluded that CRBR should be constructed as expeditiously as possible. (Record of Decision LMFBR Program.) Finally, Applicants argue that the State Department has stated that the United States must actively develop breeder technology domestically if it is to participate in the international cooperative efforts for developing such technology. For all of these reasons, Applicants believe that national policy favors, if not requires, the granting of an exemption.

Intervenors contend that the continued funding of CRBR does not evidence a Congressional intent for the NRC to issue an exemption. They also believe that the Congressional voting records on CRBR funding over the years demonstrate an erosion of Congressional support for the project. Intervenors do not believe that the phrase "timely and expeditious manner" in the Conference Report for the Omnibus Budget Reconciliation Act of 1981 can be equated to an invitation to issue an exemption from the standard licensing procedure. Turning to other indicia of national policy, Intervenors find that recent reports by the General Accounting Office and DOE's Energy Research Advisory Board do not support expeditious completion of CRBR. Moreover, Intervenors find no basis for the Commission to defer to DOE on the issue of timing of CRBR.

The Commission finds that the legislative history of the Omnibus Budget Reconciliation Act of 1981 clearly indicates a national policy that all federal

agencies should exercise their discretion to enable CRBR to be completed in a "timely and expeditious manner" so as to recoup some of the time lost since 1977. While this Congressional intent may not rise to the level of a mandate that compels the grant of the exemption, the Commission believes it is one important factor to consider that argues strongly in favor of the exemption.

(2) *Undue Hardship*

Applicants report that design and research and development activities are nearly completed for CRBR. More than \$600 million worth of hardware has been delivered or is on order. Accordingly, Applicants are ready to initiate the next major step of the project which is site preparation. Applicants believe that grant of the exemption is needed to avoid undue hardship.

For the reasons discussed below, the Commission finds that the Applicants have demonstrated substantial hardship that would result from further delay in CRBR. This hardship, in conjunction with the clear statements of national policy to expeditiously complete the CRBR, demonstrate extraordinary circumstances sufficient to support the grant of an exemption.

(i) *Information Benefits*

Applicants state that CRBR is a critical milestone in the LMFBR program. They believe that the information derived from the design, construction and operation of CRBR is vital to the LMFBR Base Research and Development Program, the Large Development Plant, and the LMFBR Fuel Cycle Program. Accordingly, Applicants are concerned that further delay in the CRBR program may adversely affect the entire LMFBR program. In support of this position, Applicants have provided an extensive list of informational benefits that the Fast Flux Test Facility (FFTF) has contributed to the CRBR program.

Intervenors contend that the alleged informational benefits of proceeding now with CRBR are speculative because of the long-term character of the LMFBR program.

The Commission finds that if the ultimate decision is to proceed with CRBR, then delay now would adversely affect the public interest by foreclosing the opportunity to transfer early information from CRBR to the rest of the LMFBR program. While it is not feasible to quantify, or otherwise precisely identify the specific adverse effects of delay, or to identify in advance just which items of information provided by CRBR will be of early value to the base R&D program or to the LDP, it is clear from the experience with the FFTF that the sooner CRBR is begun, the more likely that it will provide useful information at an early enough time to be integrated into the overall LMFBR Program.

(ii) Programmatic Coordination

Applicants also contend that minimizing further delay in the CRBR program will enhance the ability to maintain the present cadre of technically trained personnel who might otherwise drift away to other more active engineering projects. Applicants believe that such a diffusion of technical talent would not only delay the CRBR program by requiring the recruitment and training of replacement personnel, but would also delay the base R&D program and the LDP by depriving these programs of experienced personnel familiar with the overall LMFBR program.

At the oral presentation on July 29, 1982, witnesses for the Applicant stated that further delays in the CRBR program could also jeopardize the establishment of a cooperative agreement with the nuclear industry for development of the LDP and of international cooperative agreements for developing the LMFBR. Intervenors believe that Applicants' arguments are mere speculation.

The Commission finds that the public interest will likely be adversely affected by the loss of these benefits through further delay in the CRBR program. It agrees that there is an element of speculation here, but believes that this is the case whenever predictions of future effects are required to be made.

(3) Cost Savings

In Applicants' view, the Commission should consider three distinct perspectives on delay costs: (1) the appropriations or fiscal perspective; (2) the economic or resource perspective; and (3) the financial perspective.

In the appropriations perspective, delay costs are measured by increases in project costs due to inflation or increases in the prices of labor and materials plus the added costs of management during the delay. To find the net cost of delay, the delay costs must be reduced by increases in revenue due to inflation during the delay. Applicants estimate that a one-year delay will result in cost inflation of \$136 million, management costs of \$42 million, and higher revenues of \$49 million for a net increase in appropriations of \$129 million over the life of the project.

Economic costs measure the total burden on the productive capacity of the nation. For CRBR, Applicants estimate three quantifiable economic costs: (1) \$38 million per year to maintain management personnel during the period of delay; (2) deferred revenues of \$20 million per year; and (3) a savings of \$30 million per year due to the deferral of anticipated expenditures. Thus, Applicants estimate the economic cost of delay at \$28 million per year. However, Applicants believe that the most important cost of delay is the unquantifiable cost associated with the one-year deferral of the research and development information which CRBR is expected to provide. Applicants contend that the economic value of the deferred

information exceeds the \$20 million per year cost due to deferred revenues from the sale of electricity that would be produced by CRBR.

Finally, financial delay costs measure the relative burden of delay costs borne by an individual party. For CRBR, Applicants estimate that their financial delay cost in actual dollars is comprised of four components: (1) inflation costs of \$136 million, (2) increased revenues of \$49 million, (3) additional management costs of \$42 million, and (4) \$737 million to capitalize an additional year of interest measured at the time of plant completion. Thus, Applicants estimate a total financial cost of \$866 million in actual dollars or \$218 million in present worth.

Intervenors contend that the only costs of delay are real economic costs and that neither the appropriations perspective nor the financial perspective should be considered by the Commission. Moreover, Intervenors believe that Applicants have overestimated some of the economic costs. For example, Intervenors argue that Applicants have overestimated personnel costs by failing to give credit for design improvements initiated during delay, by using excessive charging rates, and by giving insufficient attention to personnel reassignments. Intervenors did not quantitatively estimate the amount of alleged overestimated personnel costs.

The OPE Report found that delay costs should be measured in real resource terms recognizing the time value of money. Therefore, the OPE Report recommended that delay costs should not include the effects of inflation on future expenditures, carrying charges on monies already expended, and overhead costs avoided by the productive reassignment of resources. The OPE Report concluded that the Applicants' estimate of delay costs of \$28 million dollars per year comes closest to approximating the actual costs of delay.

The Commission finds that the OPE Report has correctly analyzed delay costs.

4. Grant of the Exemption Will Not Affect the Demonstration of Licensability

Intervenors contend that delay would be in the public interest because grant of the exemption would be inconsistent with the licensability objective of the LMFBR program. In their view, a fundamental purpose of CRBR has been to demonstrate the licensability of LMFBR's and Congress has repeatedly affirmed this purpose. Intervenors believe that the grant of an exemption would contradict that Congressional intent, and undermine public confidence in the CRBR as a prototype for licensing an LMFBR. The Attorney General of Tennessee also believes that the grant of an exemption would undermine public confidence in CRBR. Applicants contend that the grant of an exemption will not affect the completion of all NRC licensing procedures. Applicant will still be required to satisfy all requirements for an LWA-1 in order to seek an LWA-2, and if they obtain an LWA-2, to satisfy all remaining requirements for a construction permit and operating license.

The Commission finds that the grant of an exemption in this case does not affect the project's objective of demonstrating licensability. Licensability is based on: (1) the establishment of substantive licensing review criteria for a reactor of this type and the NRC staff and ACRS review of an application against those criteria and; (2) the conduct of a licensing proceeding to determine whether the applicable licensing requirements have been met. These objectives will not be altered materially by the issuance of this exemption. The conduct of standard site preparation and clearing work has no influence on the establishment of safety-related criteria, the NRC staff's and ACRS's safety review of the application, or the Commission's conduct of an adjudicatory proceeding on safety-related issues. Moreover, the NRC will still conduct an independent NEPA review of the project and project alternatives. The grant of the exemption will have no significant effect on that review. Accordingly, the Commission finds that the grant of an exemption for site-preparation activities does not significantly affect the objective of demonstrating licensability for CRBR.

As the above discussion clearly shows, the four factors all favor the grant of this exemption request. The national policy favoring expeditious completion of CRBR is, in the Commission's view, a paramount consideration that serves to make this case an extraordinary one. Under these circumstances, the Commission believes it is in the public interest to grant Applicants' request.

IV. Conclusion

For all the reasons discussed above, the request for an exemption pursuant to 10 CFR 50.12 is hereby granted in part (as it pertains to non-safety site preparation activities) and denied in part (as it pertains to safety related activities).

Separate views of Commissioners Asselstine and Roberts are attached. Commissioner Ahearne's dissenting views are also attached. Commissioner Gilinsky was delayed while travelling and was unable to return in time for the August 5, 1982, Commission meeting. Had he been present, he would have voted against granting the exemption.

It is so ORDERED.

For the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 17th day of August, 1982.

ADDITIONAL VIEWS OF COMMISSIONER ASSELSTINE

Safety-Related Construction Activities

I strongly support the Commission's decision, reached by a vote of 4-0, to deny Applicants' request for permission to construct emergency plant service water piping that is part of the safety-related emergency service water system for the Clinch River Breeder Reactor plant. This decision was based upon the judgment of the Commission, as a matter of policy, that no safety-related activities for the CRBRP should be permitted prior to the completion of a formal, adjudicatory hearing for this project. I agree entirely with this *policy judgment* by the Commission that all safety-related activities for the CRBRP must await the completion of the formal hearing.

I would also conclude that the Commission must reject *on procedural grounds* as well, Applicants' request to perform safety-related activities prior to the completion of a formal hearing. Specifically, I believe that section 189a. of the Atomic Energy Act of 1954, as amended, requires the conduct of a hearing prior to Commission authorization to conduct safety-related activities. Moreover, the Commission's long-standing interpretation of section 189a. is that this hearing must be a formal, adjudicatory hearing. For these reasons, I would have rejected Applicants' request to conduct safety-related activities both as a matter of policy and as a matter of law.

Non-Safety-Related Construction Activities

This is the second occasion in which a DOE request for an exemption to conduct non-safety-related construction activities for the Clinch River Breeder Reactor project pursuant to 10 CFR section 50.12 has come before me. The first occurred on May 17, 1982, when the Department of Energy requested that the Commission reconsider its March 16, 1982, order denying the Department's request for an exemption to conduct site preparation activities. On that occasion, I voted to deny the DOE request without reaching the merits of the Department's proposal for an exemption to conduct site preparation activities. In reaching that conclusion, I noted at that time my view that the Department retained the option to submit a new exemption request, and that Commission consideration of a new request could proceed in a much more careful and deliberative manner than could Commission consideration of the Department's reconsideration request.

In fact, Commission consideration of this new request by the Department of Energy for an exemption to conduct site preparation activities for the CRBRP has proceeded in a careful and deliberative manner. The Commission has received written submissions on the exemption request from the Applicants and from other

parties to the CRBR licensing proceeding. Members of the public have also provided their comments on the Applicants' exemption request. Finally, the Commission has heard oral presentations from the parties and other interested commenters and has had the opportunity to question the parties in detail on the exemption request. My action today on the new exemption request, following the review process described above, represents my first determination on the merits of the DOE exemption request. For the reasons set forth in the Commission's order today, I conclude that there exist exigent circumstances in this case that make the issuance of an exemption for non-safety-related site preparation activities appropriate, and that, on balance, the public interest is best served by the issuance of this exemption.

ADDITIONAL VIEW OF COMMISSIONER ROBERTS

In his additional views, Commissioner Asselstine concludes that the Commission must, as a matter of law, reject that part of DOE's exemption request which relates to installation of emergency plant service water piping because Section 189a of the Atomic Energy Act requires a prior formal adjudicatory hearing on all safety-related activities. There are several problems with this legal conclusion. It is not at all clear that Section 189a requires formal adjudicatory hearings. While the Commission's practice has been to grant formal adjudicatory hearings when processing a construction permit application, Section 189a itself merely requires a hearing. Moreover, the Act does not define "construction." Thus, in the past, the Commission has permitted several kinds of safety-related activities to be undertaken by applicants without prior NRC authorization and certainly without prior formal adjudicatory hearings. The issue raised by Commissioner Asselstine is very important and fairly controversial. Due to its character, most Commissioners did not wish to reach the issue in the Clinch River exemption proceeding. This desire prompted me to agree to Commissioner Asselstine's proposal to reject the request to install emergency plant service water piping on policy grounds. I regret now having to write an additional view.

DISSENTING VIEWS OF COMMISSIONER AHEARNE ON THE CLINCH RIVER BREEDER REACTOR 50.12 EXEMPTION REQUEST

The Department of Energy (DOE) has again requested an exemption under 10 CFR 50.12 in order to begin site preparations for the Clinch River Breeder Reactor (CRBR). This is the third time the Commission has considered this issue within the

period of a year, previously rejecting the request on March 16 and May 18.¹ I refer the interested reader to my previous separate opinion for a detailed history of §50.12.²

There have been few changes since that time. As the Attorney General of the State of Tennessee stated in support of rejecting the waiver request:

“The new application presents no new factors or circumstances which would warrant a change in the Commission’s previous denial of a §50.12 exemption in its orders of March 16, 1982, and May 18, 1982.”³

There have been, however, several developments relating to the application: circulation of a supplement to the NRC environmental impact statement for CRBR, the pending start of the LWA hearing, and refinement of the DOE position.

By now all interested followers of this exemption application appreciate there are four factors to be weighed under 50.12. With regard to the first factor, environmental impact, I previously stated: “Although there have been changes since [the 1977 NRC staff] evaluation, the NRC staff continues to believe no significant adverse impacts will result [from site preparation activities].”⁴ Consequently I found: “Although the impacts are not so trivial that they can be entirely ignored, they do not weigh strongly against the exemption.”⁵

However since that time, the Office of Nuclear Reactor Regulation has decided to circulate for public comment a supplement to the 1977 NRC Final Environmental Impact Statement for the CRBR. As the Executive Director for Operations explained to Congresswoman Bouquard:

“Weighing importantly in the decision was the judgment that the following items constitute significant new information:

- “• assessment of specific, as opposed to a generic, fuel cycle;
- “• augmented alternative site analysis;
- “• changes in accident analysis methodology;

¹ *U.S. Department of Energy et al.*, (Clinch River Breeder Reactor Plant), CLI-82-4, 15 NRC 362 (1982) and CLI-82-8, 15 NRC 1095 (1982).

² CLI-82-4 (Separate Views of Commissioner Aheame).

Since the limited work authorization (LWA) provision became final, only one 50.12 exemption for site preparation activity has been issued. This was in a case:

“ . . . where (a) an LWA-1 had already been granted (and therefore the initial environmental hearing had been held), (b) the applicant wanted approval for construction activities going beyond those approved in the first LWA, (c) the NRC had in place a policy statement prohibiting issuing additional LWA’s until a particular rulemaking was completed, and (d) the request (referred to variously as a request for a broader LWA and for an exemption) was unopposed by the parties to the hearing. Thus, while the applicant is correct — a 50.12 exemption is part of the NRC licensing procedures — granting such an exemption would place the CRBR proceeding in the rare category, the category of extremely unusual procedures. To the extent that meeting full NRC licensing procedures is among the objectives of the CRBR program, use of a 50.12 waiver prevents meeting these objectives.” *Id.* at 381.

³ Letter from W. Leech, Attorney General, State of Tennessee to Commissioners (July 21, 1982).

⁴ Separate views at 382.

⁵ *Id.* at 382.

- “• more specific safeguards requirements;
- “• new analysis of striped bass problems and rare and endangered species considerations;
- “• change in conclusion regarding in-lieu-of-tax payments and tax revenues;
- “• change in the reactor core design.”⁶

While I still reach the conclusion that environmental impact does not lead by itself to rejection of the exemption request, obviously another straw has been added to the scale against the exemption.

My previous opinion reviews the logic leading to my concluding the truly significant factor is the public interest. I remain convinced that:

“[T]he public interest factor must be addressed — as has been obvious from the beginning. Since the Applicants have a heavy burden and the other three factors are marginal, it is clear that consideration of the public interest criterion will be determinative for me.”⁷

In addressing this fourth factor, I believe that the refinement in the DOE position requires an additional discussion beyond that in my previous opinion.

DOE's basic argument is:

- “1. Grant of the Section 50.12 request will result in the avoidance of a 6-12 month delay;
- ”2. Substantial informational and other benefits will result from avoidance of a 6-12 month delay.”⁸

Through several submissions the DOE has attempted to clarify the reasons supporting its request, particularly the nature of the benefits which will result.⁹ I quote extensively from these because I believe the Energy Department has been approaching but has not yet narrowed to a specific set of statements which it can then reiterate.

Acting Secretary Davis wrote:

“Most importantly, acceleration of the CRBRP schedule by 6 to 12 months will:

- “• Support the timely completion of the LMFBR base technology program, the Large Developmental Plant, and the LMFBR Fuel

⁶ Letter from W. J. Dircks, Executive Director for Operations, NRC to Representative Bouquard (July 28, 1982).

⁷ Separate views at 384.

⁸ “Applicants' Memorandum in Support of Request to Conduct Site Preparation Activities” at 32 (July 1, 1982) (footnotes omitted).

⁹ Letter from W. K. Davis, Acting Secretary, DOE to Commissioners (July 1, 1982) (transmitting Site Preparation Activities Report); Applicants' Memorandum, *supra*; “Applicants' Answers to Questions of Commissioner Ahearn, dated July 12, 1982” (July 22, 1982); oral presentations before the Commission on July 29, 1982; and “Applicants' Supplemental Responses to Commission Questions” (August 2, 1982) (responding to Commissioner Asselstine).

Cycle program, and enhance the prospects for success in those programs.

- “• Support the achievement of the Administration’s nonproliferation policy objectives, and enhance the prospects for a U.S. leadership position in nuclear technology.”¹⁰

In the supporting memorandum DOE argued that “the public interest would be best served by grant of the request.” They presented four reasons:

“First . . . the President, the Congress and the Department of Energy have made the national policy determination that the public interest is best served by expeditious completion of CRBRP. . . .”

“Second, the grant of this request will further the Department of Energy’s LMFBR Program, and accelerate the informational and programmatic benefits from that program . . . [G]rant of the Section 50.12 request will permit CRBRP to provide information in a timely fashion necessary to support the LMFBR Base Research and Development Program, and Large Developmental Plant, and the LMFBR Fuel Cycle Program, and will substantially enhance the prospects for success in those programs.”

“Third, the grant of the request will have a substantial positive impact on a number of international policy issues. Those issues include: (1) the development and implementation of an international safeguards system, (2) advancement of an effective non-proliferation policy, and (3) revitalization of the U.S. leadership role and influence in nuclear technology.”

“Fourth, the grant of the request will result in substantial cost savings to the nation’s taxpayers.”¹¹

Finally, in the Applicants’ response to my questions, they stated:

“However, we are urging that the Commission grant the Section 50.12 request primarily because of (1) the substantial, positive impact which prompt initiation of site preparation activities would have on important national policies of international significance, and (2) important informational benefits which will result from grant of the request.”¹²

I find it somewhat difficult to get a clear understanding of the principle arguments being made, but I believe them to be that granting the exemption request will help the U.S. non-proliferation policy, is essential to support the overall LMFBR program, and will save the taxpayers a lot of money. I question each of these conclusions.

Regarding the effect on non-proliferation policy, in answer to my direct questions in the July 29th Commission meeting, the DOE said there are no specific safeguards programs and there are no specific non-proliferation policies for which

¹⁰ July 1, 1982 letter at 2.

¹¹ Applicants’ Memorandum at 29-30.

¹² July 22, 1982 Answers to Questions at answer to question 3.

the advancement of the CRBR by six to twelve months is critical.¹³ In refreshingly frank responses, Deputy Secretary Davis made the argument that it is important for the United States to have a breeder reactor under construction if the United States hopes to be able to influence foreign countries with regard to non-proliferation policy. This at least is a very straightforward explanation and is similar to arguments that have been advanced by a substantial portion of the knowledgeable nuclear community over the last five years, but it is a subjective judgment and DOE has provided little to substantiate that judgment. Diplomatic issues abound in subjective judgment. Regulatory decisions at least attempt to coat themselves as objective judgment. I can agree with Secretary Davis that the argument can be made that it is important for a U.S. plant to be under construction for the United States to convince foreign countries to accept our non-proliferation policies. However I have not found significant evidence to support the argument, at least in my experience in dealing with a very large number of foreign representatives over the last five years.

A letter from the Department of State was provided by DOE in support of DOE's arguments concerning the international significance of this request. The State Department does support domestic work on the breeder option:

"Finally if we are to be able to work together with other countries to realize the potential energy benefits of the breeder while controlling any proliferation risk, we must participate actively in such programs domestically lest we risk having little or no say when vital decisions in this area are made."¹⁴

However, the State response explicitly does not focus on CRBR, and nothing in the response provides any basis for believing a six to twelve month delay in site preparation activities will have international repercussions. If DOE's request and the potential six to twelve month delay had significant international implications, I expect the State Department would at least be aware of the foreign policy consequences and would have mentioned them in this letter.

The second issue relates to informational benefits to be gained. In its presentation before the Commission on July 29th the DOE was unable to provide details regarding the informational benefits for which six to twelve months would be critical. Since then, in their response to Commissioner Asselstine, the Department has provided an extensive development of that issue — a far better argument than they have made in the past. It is an argument by analogy. The analogy the Department presents is the very substantial benefit that the CRBRP design has had from the Fast Flux Test Facility (FFTF), a large nonpower liquid metal breeder

¹³ At the least, I find the statements in Applicants' Memorandum at page 30 to be somewhat misleading.

¹⁴ Letter from R. T. Kennedy, Undersecretary of State for Management, DOS to W. K. Davis, Deputy Secretary, DOE (July 29, 1982).

facility. The response does not focus on the relative status of the FFTF and the CRBR or the length of the CRBR delay, which would be important in assessing the validity of the analogy. However, the Department has shown, through many specific details, that because the Clinch River Breeder Reactor Project was delayed, it was able to use a large amount of information generated in the design, development, construction, and initial operation of the FFTF. The Department's argument is, consequently, if the CRBRP can be accelerated, such informational transfer to the Large Development Plant (LDP) can be expected.

This argument has led me to revisit a position I took the first time the Commission addressed DOE's exemption request. At that time I supported the Commission's 1976 decision¹⁵ in which the Commission concluded the timing of the liquid metal fast breeder reactor program was to be taken as established by the ERDA impact statement and associated processes. Consequently, I reached the conclusion the NRC should defer to the DOE on the timing of the LMFBR program.¹⁶

However, it does not follow that "the timing of Clinch River — as expeditiously as possible — is a matter on which the Commission should give complete deference" to DOE.¹⁷ First, it takes more than a simple assertion by DOE that site preparation should begin now rather than six months or a year from now. There must be some basis for that assertion "as established by the ERDA impact statement and associated processes." Second, under the Commission's decision, NRC did not give complete deference to DOE on issues such as the "likelihood that the proposed CRBR project will meet its objectives within the LMFBR program" or the "[a]lternatives for meeting the objectives. . . to be evaluated in terms of the objectives defined in the ERDA impact statement."¹⁸

Therefore, it is appropriate to address the question of schedule and, in particular, that for the LDP as it affects the ability of the CRBR to meet program objectives since DOE has linked their support of informational benefits to the LDP. Unfortunately, the LDP has no specific schedule and its timing is increasingly open to question. DOE's programmatic environmental impact statement presents an LMFBR development schedule, including the LDP and the CRBRP. The discussion of the schedule indicates "Beginning CRBRP construction in 1982 or early 1983 will allow completion around 1990 . . . [T]he program envisions that a

¹⁵ *U.S. Energy Research and Development Administration, et al.* (Clinch River Breeder Reactor Plant), CLI-76-13, 4 NRC 67 (1976).

¹⁶ Separate views at 373-374.

¹⁷ Applicants' Memorandum at 17. This argument was reiterated before the Commission: "The Department's finding that the timing of Clinch River should be as soon as possible is likewise entitled to controlling deference." Tr. 22-23 (July 19, 1982 Commission meeting) (statement by G. Edgar, Counsel for Project Management Corporation).

This position is untenable. The DOE has argued the public interest finding is driven by the timing. (I agree timing is the critical issue.) Therefore, if I defer to DOE on the timing, I must defer to DOE on the public interest finding. Since I have concluded that 50.12 turns on that factor, in effect I would be forced to defer totally to DOE on the waiver itself. That I cannot responsibly do.

¹⁸ CLI-76-13 at 92.

large developmental plant (LDP) would begin operation in the mid-1990's."¹⁹ But as the DOE made clear in its presentation to the Commission on July 29th, there is currently no specific schedule for the LDP.

The DOE does not expect to reach a decision on whether to begin preliminary design of the LDP until September 1984, and a decision to initiate construction will not be made until the late 1980's. Obviously, since the Department's program is predicated upon the plant being built by industry, the timing of the industrial demand will affect the timing of the construction of the LDP.²⁰

To the extent it is argued there is a direct link between the CRBR schedule and the LDP schedule based on the need to provide information for the LDP, slips and uncertainties in the LDP schedule affect the timing of the need for information from the CRBR. The current state of the LDP schedule makes it difficult to conclude a six to twelve month delay in CRBR will have a substantial impact. Even if it did, an alternative which is consistent with the updated ERDA/DOE program impact statement would be to slip the LDP six months to a year. As stated earlier, according to the impact statement "the program envisions [the LDP] would begin operation in the mid-1990's." That suggests considerable leeway in the precise timing of the LDP.

However, even the link between the LDP and CRBR is weak, as the following discussion with a DOE representative in the July 29th Commission meeting shows:

"Commissioner Ahearn: Okay, so you are saying that the other program schedule is not that tightly pinned to the Clinch River schedule:

"Mr. Chipman: No. That's correct . . .

"Commissioner Ahearn: But the — let me make sure I understand. You are saying that the schedule of the other parts of the program is not that tightly linked to the Clinch River schedule.

"Mr. Chipman: That is a hard thing to answer with a simple yes or no.

"Commissioner Ahearn: But I think you just did answer it.

"Mr. Chipman: But in the way I think you are asking it, I would say it is not that tightly linked."²¹

During DOE's oral presentation the legal representative for the applicants also referred us to a July 28th document:

"DOE has completed its update or supplement to the LMFBR program environmental statement. . . . The Department signed the record of decision on that supplement on the 28th of July. . . . [The programmatic

¹⁹ "Final Environmental Impact Statement (Supplement to ERDA-1535, December 1975) Liquid Metal Fast Breeder Reactor Program," DOE/EIS-0085-FS at 41 (May 1982).

²⁰ Concerns have already been raised on this issue. The GAO has recently said "[I]t is also important to recognize that under DOE's present program timetable, DOE could develop a commercial size plant decades before it is economically competitive or is needed on the basis of uranium availability." "The Liquid Metal Fast Breeder Reactor — Options for Deciding Future Pace and Direction," GAO/EMD-82-79 at 27 (July 12, 1982).

²¹ Tr. 55-56 (July 29, 1982 Commission meeting).

environmental impact statement (PEIS)] conclusively establishes the timing of the project [to be] as soon as possible."²²

I have reviewed this "Record of Decision" and find the following statement in the conclusion section:

"The CRBRP is a key LMFBR program and is needed as soon as possible."²³

Unfortunately, I cannot find any substantive support for that statement in the document itself or in the PEIS. The issue is whether a six to twelve month delay will have a substantial impact. Nothing in the impact statement or the "Record of Decision" supports the assertion that a delay of this magnitude will be significant. The justification of timing is in terms of years and decades rather than months.

In discussing the role of CRBR in the LMFBR program, DOE has left out an important aspect. According to the PEIS,

"The successful demonstration of the LMFBR option by design, construction and operation of the CRBRP and the LDP before the turn of the century is expected to provide utilities with the confidence required to begin breeder commercialization when market factors dictate."²⁴

An important element in building confidence is to demonstrate licensability. DOE has failed to address effectively the arguments that grant of this request is contrary to that objective. For example a Senator argued:

"The Clinch River Breeder Reactor was initiated with the clear intent that it would be utilized as a demonstration project to explore the commercialization potential of breeder reactors. Breeder reactor demonstration includes the reactor's ability to be fully licensed. Therefore, the original purpose of the CRBR project would be overridden by any deviation from the established NRC licensing process. And it is abundantly clear to me that the DOE request represents a shortcut at the very first turn of the NRC licensing process."²⁵

DOE argues we should grant the request because "the CRBRP will still undergo and satisfy all elements of NRC's licensing procedures" including all findings necessary for an LWA-1 (as a prerequisite for an LWA-2), an LWA-2, a construction permit, and an operating license.²⁶

²² Tr. 21-22 (July 29, 1982 Commission meeting).

²³ "Liquid Metal Fast Breeder Reactor Program; Record of Decision," 47 *Fed. Reg.* 33771, 33773 (August 4, 1982) (decision is dated July 28, 1982).

²⁴ DOE Supplement to ERDA-1535 at 42.

²⁵ Letter from Senator Mitchell to Chairman Palladino (August 2, 1982).

²⁶ Applicants' Memorandum at 11-12.

The LWA-1 hearing is scheduled to begin on August 23rd²⁷ and will address the merits of approving activities covered by the current request. As DOE points out, the hearing is necessary even though the Commission has granted the exemption since the LWA-1 findings are a prerequisite for an LWA-2. However, I see a significant difference between addressing the merits prior to authorizing the activity and addressing the merits after authorizing the activity.

We are on the path warned against by Senators Hatfield and Cohen:

“. . . If the NRC were to authorize site preparation activities at this time, it would be compelled to grant exemptions from established regulatory procedures for the CRBR. We have serious doubts about the wisdom of granting such exemptions . . . [W]e believe it is in the best interests of future commercial development of LMFBRs for the CRBR to undergo the established regulatory procedures without exemption. Furthermore, we believe granting exemptions to the CRBR could seriously erode the public's confidence in the federal nuclear energy programs in general and breeder reactors programs in particular.”²⁸

Finally, turning to the cost issues — in this latest DOE request for an exemption Acting Secretary Davis wrote: “While acceleration of the CRBRP schedule will yield primary benefits in terms of information, as indicated in the Department's letter of February 25, 1982, it will also yield substantial monetary cost savings to the taxpayer.”²⁹ The supporting memorandum states that “the grant of the request will result in substantial cost savings to the nation's taxpayers.”³⁰

In response to the first exemption request I described the great difficulties I found with the Department's cost estimates. In the applicants' most recent request, they again referred to “substantial cost savings.”³¹ Secretary Davis enclosed the Site Preparation Activities Report (SPAR)³² with the request and wrote: “The enclosed Site Preparation Activities Report . . . provides the detailed technical justification and support for this [exemption] request.”³³ The SPAR also referred to a “substantial cost savings” to the taxpayers.³⁴ The SPAR quoted a savings of \$28-218 million, referencing responses submitted in support of the first exemption request.³⁵

²⁷ See letter from E. Greenburg and B. Finamore, Counsel for NRDC and Sierra Club, to Commissioners (August 3, 1982) (“During a conference with counsel held yesterday, the Licensing Board ruled that LWA hearings will commence in three weeks, on August 23 as previously scheduled.”).

²⁸ Letter from Senators Hatfield and Cohen to Chairman Palladino (December 15, 1981).

²⁹ July 1, 1982 letter at 2.

³⁰ Applicants' Memorandum at 30.

³¹ July 1, 1982 letter at 2.

³² “Clinch River Breeder Reactor Plant, Site Preparation Activities Report” (June 1982).

³³ July 1, 1982 letter at 1.

³⁴ SPAR at v. and 7-2.

³⁵ SPAR at 7-12 to 7-14 and 8-7.

Because of the great difficulties I had with these estimates as outlined in my separate views in March, I did ask on July 12, "Does the DOE continue to support all cost calculations in reference 7-5 [of the SPAR, which merely lists the applicants' original submittals]?" The applicants confirmed: "Applicants support the cost calculations contained in Deputy Secretary Davis' [February 25] letter and the specific references to previous submissions in that letter."³⁶ I must therefore conclude that all the previous concerns I had with respect to the costs remain.³⁷ Since the Applicants insist on continuing to endorse these costs and no new costing information has been provided, I have the same reservations as I expressed in March.

In summary, I believe that the Applicants again have failed to make the public interest case. As the time grows short before the beginning of the LWA hearing, the arguments for granting a waiver are harder to make. The Applicants have done a better job arguing information transfer, focusing on the FFTF/CRBR connection. However, this has forced me to look at the LDP schedule and the impact of a relatively short delay in CRBR. I find that very tenuous. I accept the sincerity of Mr. Davis' arguments and grant substantial weight should be given his experience in international negotiations and building construction. While much better than the previous DOE arguments, they are still not sufficient for me to conclude the public interest finding weighs in the DOE's favor. The issue is whether avoiding a relatively short delay, six to twelve months, results in benefits significant enough to justify the extraordinary action of granting this exemption request. With the DOE presenting entirely subjective arguments in support of the international policy benefit, very tenuous links to the LDP program schedule, and the DOE persisting in support of its previous wide-ranging cost estimates, I find that sound public regulatory policy requires the waiver exemption be denied.

Having seen Commissioner Asselstine's views, I have one additional comment. Section 189a of the Atomic Energy Act simply states:

"The Commission shall hold a hearing after thirty days' notice and publication once in the *Federal Register*, on each application under section 103 and 104 b. for a construction permit for a facility, and on any application under section 104 c. for a construction permit for a testing facility." There is no mention of "safety-related activities." I agree it is longstanding Commission practice to hold a formal, adjudicatory hearing to meet the requirement for a hearing on a construction permit application. However, the Commission has not interpreted the Atomic Energy Act to mean that no safety-related activities can be authorized prior to issuance of a construction permit and completion of the related hearing.

³⁶ July 22, 1982 Answers to Questions at answer to question 4.

³⁷ Separate views at 390-97. A summary of my separate views, which includes my principle objections to DOE's cost figures, is attached as an Appendix.

APPENDIX

Summary from "Separate Views of Commissioner Ahearne" on the Initial CRBR 50.12 Exemption Request*

The Department of Energy (DOE) has requested an exemption under 10 CFR 50.12 in order to begin site preparation for the Clinch River Breeder Reactor (CRBR). In addressing this request, I conclude it is not for the NRC to address (1) the need for an LMFBR program or for a demonstration scale facility or (2) the total cost of the CRBR.

Section 50.12 has a long history. A version of 50.12(a) authorizing specific exemptions has been in existence for over 20 years. When the Atomic Energy Commission (AEC) modified its regulations in 1972 to place restrictions on site preparation activities because of its new National Environmental Policy Act (NEPA) responsibilities, it introduced a version of 50.12(b) to provide a specific method by which applicants could show why work already begun should not be suspended until the AEC did an environmental review.

In 1974 the AEC developed an alternate way to approve site preparation activities prior to issuance of a construction permit — the Limited Work Authorization (LWA). A 50.12 exemption was still an option, but the Commission noted it was to be used "sparingly and only in cases of undue hardship." Since the LWA provisions became final in 1974, only one 50.12 exemption for site preparation activities has been issued.

I conclude 50.12 can be applied in this case. However, DOE must make a strong showing on the four 50.12(b) factors since 50.12 is to be used only in very unusual circumstances. The factors to be considered are: environmental impact, redressability, foreclosure of alternatives, and public interest.

The NRC staff has concluded the work that would be done under the exemption would have no significant environmental impact, and the local authorities strongly support the request. Nevertheless, site preparation inherently involves some environmental impacts and \$88 million would be spent on project construction. Reasonable restoration is possible, although there may be some potential problems because of funding considerations. No alternative appears to be foreclosed by the proposed work.

Addressing the effect of delay on the public interest, I considered whether there is (1) a Congressional mandate, (2) a need to move ahead on the project for production of power or research and development (R&D) purposes, or (3) a substantial dollar cost to the taxpayer for delay.

*CLI-82-4, 15 NRC 362 (1982).

After reviewing many letters from Congress and the Congressional legislative history, I conclude there is no mandate to waive — or not to waive — our standard procedures. The project is not being justified by need for power, and Congress has confirmed such a need is not a factor. Since I defer to DOE on the general need for R&D and it has not made that case, R&D needs do not provide a justification for the exemption. Thus the decision rests on the cost. And it is here the applicant presented its worst case.

We have the following DOE estimates for a one-year delay:

November 30, 1981: \$120 million

January 18, 1982: (a) \$120 million, "clearly conservative"
(b) \$175 million

January 28, 1982: (a) \$120 million, "clearly conservative"
(b) \$161 million
(c) \$166 million
(d) \$175 million

February 25, 1982: (a) \$129 million, "appropriations perspective"
(b) \$28 million, "economic perspective"
(c) \$218 million, "financial perspective"

I conclude the DOE has finally agreed that as far as the true dollar cost of delay, it is in the region of \$30 million — coincidentally, about the cost of the management team.

This is sufficiently different from the original estimate as to indicate the DOE paid little attention in preparing its original statement, although the series of estimates does not lead me to have confidence in *any* of the estimates. In the case of a utility applicant we would look with strong disfavor on such rapidly shifting submissions.

Thus, I conclude the DOE has failed to make the public interest case and, in the cost area, badly.

I am also concerned that DOE may not understand the appropriate controls that should be applied when assuming the role of a license applicant. The NRC has high standards for license applicants — which underlie the concept of licensability, which is a CRBR objective. It is because of these standards that showing licensability is an important accomplishment.

Therefore I vote to deny the exemption request.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Gary J. Edles, Chairman
Dr. John H. Buck
Dr. Lawrence R. Quarles*
Christine N. Kohl*
Dr. Reginald L. Gotchy

In the Matter of

Docket No. 50-289-SP
(Restart)

METROPOLITAN EDISON COMPANY
(Three Mile Island Nuclear
Station, Unit No. 1)

August 2, 1982

The Appeal Board suspends until further notice licensee's obligation to submit certain information requested as part of the Board's *sua sponte* review, and clarifies the scope of its appellate jurisdiction in this special proceeding.

APPEAL BOARD: SCOPE OF REVIEW

The fact that the Three Mile Island restart proceeding is a special proceeding not specifically addressed by Commission regulations does not deprive the Appeal Board of its well-established right to review *sua sponte* an issue that was contested before the Licensing Board but not raised on appeal. See generally *Virginia Electric and Power Co.* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-491, 8 NRC 245, 247 (1978); *Public Service Electric and Gas Co.* (Salem Nuclear Generating Station, Unit 1), ALAB-650, 14 NRC 43, 49 n.6 (1981).

*Because Part I of this opinion concerns our review of all phases of this proceeding, we include all the members of the several Appeal Boards assigned to review this case.

APPEAL BOARD: SCOPE OF REVIEW (SUA SPONTE ISSUES)

Authority to review the entire record of a proceeding independently of the parties' position is different from (1) the power in operating license application proceedings to consider serious safety, environmental, and common defense and security matters not otherwise placed in issue by the parties, and (2) seeking Commission approval in cases not involving operating license applications before pursuing new safety questions not previously put in controversy or otherwise raised by the parties.

MEMORANDUM AND ORDER

In our order of July 14, 1982 (unpublished), we directed licensee and the NRC staff to answer certain questions arising out of the plant design and procedures phase of this proceeding. On July 26, 1982, licensee filed an objection to our question III.E (concerning environmental qualification), asserting that it goes beyond the scope of the restart hearing and is governed by Commission regulations of generic applicability to operating reactors. Licensee also argues that many of our questions exceed the proper scope of appellate review in this case. Licensee's Objection to and Comments on Appeal Board Order dated July 14, 1982 (July 26, 1982), at 1-2, 6-7, 13.¹

In view of the large amount of data which licensee asserts would have to be submitted in answering question III.E (*id.* at 6), as well as the pendency of a final rule on environmental qualification (see 47 *Fed. Reg.* 28363 (June 30, 1982)), we suspend until further notice licensee's objection to answer that question. Parties may respond to the licensee's obligation by filing a reply no later than August 20, 1982, and may address licensee's objection at oral argument.²

With regard to licensee's comments on our other questions, we perceive a need to clarify the scope of our appellate review, as detailed in Part I, below. Licensee's comments in this connection include a request that we set aside time at oral argument for discussion of the proper scope of our appellate review in this proceeding. We believe the issue can be resolved without oral argument; the licensee's request is therefore denied. Part II contains our notice of oral argument for the plant design, procedures, and separation issues on appeal.

¹ Licensee nonetheless intends to answer all questions addressed to it (except III.E). Licensee's Objection at 13.

² Licensee also requested that, in the event we disagree with its objection, we certify the matter to the Commission. Because of our temporary suspension of licensee's obligation to respond to question III.E, we need not rule on licensee's request now.

I. SCOPE OF APPELLATE REVIEW

As a general proposition, licensee asserts that our appellate jurisdiction in this proceeding is limited to a review of only those contested issues that the parties have raised before us in their exceptions and briefs. In its view, we should confine our inquiry accordingly and not ask questions about matters covered at the hearing but not raised in exceptions. Licensee's Objection, *supra*, at 6-8, 11-13.³ We believe that licensee's position is not only incorrect but fundamentally inconsistent with the proper exercise of our appellate review function.

As licensee correctly points out, this is a special proceeding not specifically addressed by Commission regulations. But in its August 9, 1979 Order and Notice of Hearing, the Commission expressly directed that the *TMI-1* restart proceeding was to be "conducted in accordance with the applicable provisions of subpart G of the Commission's Rules of Practice set forth in 10 CFR Part 2." *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit 1), CLI-79-8, 10 NRC 141, 147 (1979).⁴ In the same order, the Commission directed that, pursuant to 10 CFR 2.760(a), upon issuance of the Licensing Board's initial decision "the record be certified to the Commission itself for final decision." *Id.* at 147. In view of the length of the hearing, size of the evidentiary record, and number of complex issues involved, the Commission later reconsidered what it characterized as a "decision to deviate from its customary practice" and ordered that an Appeal Board be established to hear initial appeals. CLI-81-19, 14 NRC 304, 305 (1981).

Nothing in the latter order suggests that the Commission intended to relieve us of our well-established authority to review the entire record of a proceeding *sua sponte*, independently of the parties' position, in accordance with subpart G. This authority to review the entire hearing record, including matters not appealed by the parties, is expressly delegated to us in subpart G of 10 CFR Part 2. Pursuant to 10 CFR 2.785(a), we are authorized "to exercise the authority and perform the review functions which would otherwise have been exercised and performed by the Commission, including, but not limited to, those under [10 CFR 2.770] in . . . such . . . licensing proceedings under the regulations . . . as the Commission may specify." Section 2.770(a) states that, although it may limit the issues to be reviewed and consider only findings and conclusions to which exceptions have been filed, the Commission (and hence, the Appeal Board) "will ordinarily consider the whole record on review." In short, "there is no doubt that the absence of an appeal does not deprive us of the right to review an issue that was contested

³ One of the licensee's particular concerns is that our inquiry may delay resolution of the issues on appeal. Such is not our intention. To the contrary, we anticipate that the answers provided may serve to clarify and thereby expedite our consideration of the matters before us.

⁴ Subpart G contains rules of general applicability that govern procedure in all adjudications initiated by the issuance of, *inter alia*, a notice of hearing. 10 CFR 2.700.

before a licensing board." *Virginia Electric and Power Co.* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-491, 8 NRC 245, 247 (1978). See, e.g., *Public Service Electric and Gas Co.* (Salem Nuclear Generating Station, Unit 1), ALAB-650, 14 NRC 43, 49 n.6 (1981). There is no indication whatsoever in the Commission's order returning appellate jurisdiction to us that it intended to override the customary scope of our appellate review as established by the regulations and case precedents. Accordingly, the scope of our review of each phase of this proceeding will be comparable to that generally undertaken in all cases before us.⁵

II. NOTICE OF ORAL ARGUMENT

On July 26, 1982, in response to licensee's motion of the same date, we granted a three-day extension (to August 12, 1982) for the filing of licensee's responses to our questions. Replies are due by August 25, 1982. Oral argument on issues of plant design, procedures, and separation will begin at 9:30 a.m. on Wednesday, September 1, 1982, in the NRC Public Hearing Room, Fifth Floor, East-West Towers Building, 4350 East-West Highway, Bethesda, Maryland. The Union of Concerned Scientists is allotted a total of 90 minutes for its presentation. Licensee and the staff are each allotted 60 minutes. Appellants may reserve up to 25 percent of their time for rebuttal. We anticipate that both morning and afternoon sessions will be required. Parties need not address all issues at oral argument and should concentrate on the more important matters raised on appeal.

We recognize that the staff has withdrawn its support of the Licensing Board's decision on the need for reactor water level instrumentation. All parties should be prepared to address licensee's arguments on appeal of this issue.

⁵ Our authority to review the entire record must be distinguished from our power in operating license application proceedings to consider serious safety, environmental, and common defense and security matters not otherwise placed in issue by the parties. See 10 CFR 2.785(b)(2). That authority can be invoked only after advising the Commission and observing special procedures. Cf.: *Houston Lighting and Power Co.* (South Texas Project, Units 1 & 2), LBP-81-54, 14 NRC 918, 922-23 & n.4 (1981). We also distinguish those cases *not* involving operating license applications where we seek Commission approval before pursuing new safety questions not previously put in controversy or otherwise raised in an adjudicatory context. See CLI-82-12, 16 NRC 1 (1982), denying our June 30, 1982 request for authorization to consider three new safety issues as part of our appellate review of plant design, procedures, and separation matters in this very proceeding.

Each party is to notify the Secretary to this Board, in writing, by *Monday, August 23, 1982* of the name of the person who will present argument on its behalf.
It is so ORDERED.*

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

*Dr. Quarles was not available to participate in this decision.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Christine N. Kohl, Chairman
Dr. W. Reed Johnson
Howard A. Wilber

In the Matter of

Docket No. STN 50-437-ML

OFFSHORE POWER SYSTEMS
(Manufacturing License for
Floating Nuclear Power Plants)

August 11, 1982

The Appeal Board (1) considers the applicability of the “immediate effectiveness” regulation (10 CFR 2.764) to the Licensing Board’s June 30, 1982 initial decision (LBP-82-49, 15 NRC 1658 (1982)) in this manufacturing license proceeding and concludes that it is not obliged by the regulation to conduct such a review in manufacturing license proceedings; (2) announces that in the absence of exceptions to the initial decision, it has undertaken *sua sponte* review of it; and (3) reminds the parties that the initial decision shall not constitute final agency action until completion of that review by the Appeal Board and its further order.

RULES OF PRACTICE: IMMEDIATE EFFECTIVENESS REVIEW

The Commission’s “immediate effectiveness” regulation, 10 CFR 2.764 (1982), *as amended*, 47 Fed. Reg. 2286 (January 15, 1982), requires in the case of construction permits, certain limited and immediate appeal board and Commission review — and, in the case of operating licenses, Commission review only — of an initial decision before it can become effective.

RULES OF PRACTICE: IMMEDIATE EFFECTIVENESS REVIEW

Under the Commission's "immediate effectiveness" regulation, an appeal board is not obliged to conduct an immediate effectiveness review in manufacturing license proceedings.

RULES OF PRACTICE: IMMEDIATE EFFECTIVENESS REVIEW

The only time an appeal board — as opposed to the Commission itself — is required to conduct an immediate effectiveness review is within 60 days of an initial decision authorizing the issuance of a reactor construction permit. 10 CFR 2.764(e)(2).

REGULATIONS: INTERPRETATION

The starting point in interpreting a regulation is the language of the regulation itself. *Cf. Lewis v. United States*, 445 U.S. 55, 60 (1980). Depending on the circumstances, it may be appropriate to consider the underlying history of the regulation as well. *Cf. Tennessee Valley Authority v. Hill*, 437 U.S. 153, 184-85 (1978).

MEMORANDUM AND ORDER

1. On June 30, 1982, the Licensing Board issued its initial decision in this proceeding — the first to involve an application for a license to manufacture standardized nuclear plants. LBP-82-49, 15 NRC 1658 (1982). See 10 CFR Part 50, Appendix M.¹ No party has filed exceptions pursuant to 10 CFR 2.762(a). Accordingly, the Board's decision is now before us for *sua sponte* review. See *Sacramento Municipal Utility District (Rancho Seco Nuclear Generating Station)*, ALAB-655, 14 NRC 799, 803 (1981).

Although we have already begun that review, it may be some time before it is completed, given the size of the record and the length and detail of the Licensing Board's opinion. As is ordinarily the case in such circumstances, the initial

¹ Until this proceeding, the licensing of nuclear power reactors involved facilities assembled and constructed at the sites where they are to be operated. Section 103 of the Atomic Energy Act, 42 U.S.C. 2133, however, permits the Commission to issue manufacturing licenses, which authorize solely the manufacture of standardized facilities at industrial locations. Permanent sites for the operation of these plants are to be chosen later. A construction permit is required prior to commencement of necessary work at the site ultimately selected by the utility, and an operating license is required for operating the reactor. See 38 *Fed. Reg.* 30251-30252 (November 2, 1973).

decision shall not constitute final agency action until completion of our review and further order.

2. Because this is the first manufacturing license case to reach us, we believe it is useful to state formally our view on the applicability of the Commission's "immediate effectiveness" regulation to this type of proceeding. See 10 CFR 2.764 (1982), *as amended* 47 *Fed. Reg.* 2286 (January 15, 1982). That regulation requires, in the case of construction permits, certain limited and immediate appeal board and Commission review — and, in the case of operating licenses, Commission review only — of the initial decision before it can become effective. Based on our analysis of the regulation itself (in both its present and earlier forms), its history, and its purpose, we conclude that 10 CFR 2.764 does not oblige us to conduct an immediate effectiveness review in manufacturing license proceedings.²

a. We begin with the language of the regulation itself. *Cf. Lewis v. United States*, 445 U.S. 55, 60 (1980). 10 CFR 2.700 states that the general rules of subpart G (which includes 10 CFR 2.764) "govern procedure in all adjudications initiated by . . . a notice of hearing." Although a proceeding involving an application for a manufacturing license falls into that category, the more specific provisions of section 2.764 contain no reference whatsoever to manufacturing licenses.³ In contrast, that section contains specific references to "construction permits" and "operating licenses," as well as the less common "license for the construction and operation of an independent spent fuel storage installation" and "construction authorization or license under [10 CFR] Part 60 . . . (relating to disposal of high-level radioactive wastes in geologic repositories)."⁴ Presumably, had the Commission intended to include manufacturing licenses within the scope of its special immediate effectiveness rule, it would have done so in unmistakable terms comparable to those used in the rule for other types of licenses.⁵

² The only time an appeal board — as opposed to the Commission itself — is required to conduct an immediate effectiveness review is within 60 days of an initial decision authorizing the issuance of a reactor construction permit. 10 CFR 2.764(e)(2). (In those circumstances, we must determine, principally on the basis of the four criteria in 10 CFR 2.788(e), if a stay of the permit issuance is warranted — regardless of whether one has been requested.) Thus, if we were required to undertake an immediate effectiveness review of an initial decision authorizing issuance of a manufacturing license, it would have to be pursuant to 10 CFR 2.764(e)(2).

³ Earlier versions of 10 CFR 2.764 likewise contained no reference to manufacturing licenses. See 36 *Fed. Reg.* 828 (January 19, 1971); 44 *Fed. Reg.* 58559 (October 10, 1979) [post-TMI interim policy]; 44 *Fed. Reg.* 65049, 65050 (November 9, 1979) [10 CFR Part 2, Appendix B (1980)]; 46 *Fed. Reg.* 28627, 28628 (May 28, 1981); 46 *Fed. Reg.* 47764, 47765 (September 30, 1981).

⁴ We see no basis for inferring that the Commission intends the term "construction permit," as used in 10 CFR 2.764(e), to encompass "manufacturing license." Throughout the agency's regulations, these terms are used to refer to distinctly separate types of licenses and activities. See, e.g., 10 CFR 2.503. See also 10 CFR 50.10(b)(2); 38 *Fed. Reg.* at 30252. Compare 10 CFR Part 50, Appendix M, with *id.*, Appendix N.

⁵ The special regulations applicable to manufacturing license proceedings, 10 CFR 2.500 *et seq.*, lend further support to this view. Section 2.504 describes the provisions of subpart G (which, as noted above, includes 10 CFR 2.764) that relate to manufacturing licenses as "matters of radiological health and safety, environmental protection, and the common defense and security." Notably, the immediate effectiveness provision is not listed.

b. Given the clear absence of any reference to manufacturing licenses in connection with the immediate effectiveness review prescribed by 10 CFR 2.764, there is no particular need to resort to the underlying Statement of Consideration or Notice of Proposed Rulemaking for each relevant portion of the existing rule. Nonetheless, we have undertaken such a review and found nothing that would suggest a Commission desire for appeal board immediate effectiveness review in manufacturing license cases. *Cf. Tennessee Valley Authority v. Hill*, 437 U.S. 153, 184-185 (1978). These documents speak solely in terms of construction permits or authorizations, operating licenses, and amendments to them. See 46 *Fed. Reg.* 47764 (September 30, 1981); 46 *Fed. Reg.* 28627 (May 28, 1981); 46 *Fed. Reg.* 20215 (April 3, 1981).⁶

Only in the Statement of Consideration for the most recent amendment to section 2.764 is there any mention of manufacturing licenses. See 47 *Fed. Reg.* 2286. That rulemaking substantially amended 10 CFR Part 50 so as to impose additional licensing requirements (resulting from the accident at Three Mile Island) on applicants for construction permits and manufacturing licenses. It also made some "non-substantive," "conforming" amendments to 10 CFR 2.764. *Id.* at 2300. Specifically, it eliminated two statements from subsections 2.764(e)(1)(ii) and (3)(iii). See 10 CFR 2.764(e)(1)(ii), (3)(iii) (1982). The relevant portion of the accompanying Statement of Consideration explains:

In the Notice of Rulemaking (46 FR 18045) published on March 23, 1981, under Substance of the Rule, the Commission stated, "It is the Commission's view that this new rule, together with the existing regulations, form a set of regulations, conformance with which meets the requirements of the Commission for issuance of a construction permit or manufacturing license." *The Commission reaffirms this view with the exception of hydrogen control measures for the manufacturing license, and, to eliminate any ambiguity regarding its intent, is amending its special review procedures in 10 CFR 2.764 to delete the statement in paragraph (e) that compliance with existing regulations may turn out to no longer warrant approval of a license application.*

47 *Fed. Reg.* at 2292 (emphasis added). The emphasized statement could be read to imply that the immediate effectiveness review procedures of section 2.764 pertain to manufacturing licenses. Closer examination of both this statement and the sentences actually deleted from 10 CFR 2.764, however, reveals otherwise.

⁶ The explanatory statements for earlier versions of the rule are to the same effect. See 36 *Fed. Reg.* 828; 44 *Fed. Reg.* 58559; 44 *Fed. Reg.* 65049.

The Commission now has under way an entirely separate rulemaking in which it is considering amendments to the immediate effectiveness rule insofar as construction permits are involved. See 45 *Fed. Reg.* 34279 (May 22, 1980). That proposal likewise fails to mention manufacturing licenses.

The phrase “to eliminate any ambiguity regarding its intent” relates to the Commission’s intent that the new TMI-based regulations adopted in this proceeding constitute the basic requirements for a construction permit or manufacturing license. This does not relate back to the phrase “the exception of hydrogen control measures for the manufacturing license.”

c. Finally, the very reasons for immediate effectiveness review in construction permit and operating license cases do not pertain to manufacturing license proceedings. In the latter, no plant site has been selected and, of course, there is no completed facility awaiting approval to begin operations. See note 1, *supra*. Thus, there are no immediate consequences for the public health and safety necessitating such a review.⁷ (Also, on the other side of the coin, there is not the sense of urgency requiring immediate effectiveness of a favorable licensing board decision that exists when an applicant is fully ready to commence construction or operation. See generally 36 *Fed. Reg.* 828, the Statement of Consideration for an early version of the immediate effectiveness rule, noting the Commission’s desire to “expedite the licensed operation of facilities needed for the generation of electric power without adversely affecting the public health and safety and the common defense and security.”)

A recent amendment to 10 CFR 2.764 underscores the logic in our decision not to conduct immediate effectiveness reviews of manufacturing license decisions. In September 1981 the Commission deleted the requirement for its own such review of decisions authorizing fuel loading and low-power testing. It explained:

First[,] such activities involve minimal risk to the public health and safety, in view of the limited power level and correspondingly limited amounts of fission products and decay heat, and greater time available to take any necessary corrective action in the event of an accident.

Second, in operating license cases since the Three Mile Island accident the Commission has generally conducted its effectiveness review on a two-stage basis, first reviewing a fuel loading and low power testing license and then reviewing a full power license. Commission experience has been that in no case has fuel loading and low power testing prejudiced the later full power decision.

46 *Fed. Reg.* at 47765. The risks of harm to the public health and safety and prejudice to future construction permit and full-power operating license decisions are even less in the case of a manufacturing license. *A fortiori*, there is no basis for

⁷ In this connection, we note that, even if we were required to conduct an immediate effectiveness review, it is unlikely that the “irreparable injury” criterion of 10 CFR 2.788(e)(2) — which 10 CFR 2.764(e)(2)(ii) directs us to apply — could ever be satisfied in the case of a manufacturing license.

conducting an immediate effectiveness review of a manufacturing license decision.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Alan S. Rosenthal, Chairman
Thomas S. Moore
Howard A. Wilber

In the Matter of

Docket Nos. 50-413
50-414

DUKE POWER COMPANY, *et al.*
(Catawba Nuclear Station,
Units 1 and 2)

August 19, 1982

The Appeal Board accepts a Licensing Board referral, pursuant to 10 CFR 2.730(f), of a number of interlocutory Licensing Board rulings conditionally admitting certain contentions in this operating license proceeding. The Appeal Board concludes that a licensing board has no authority to admit conditionally, for any reason, a contention that falls short of meeting the specificity requirements of 10 CFR 2.714(a). The Appeal Board provides further interpretation of the governing Rules of Practice relating to contentions and leaves to the Licensing Board the application of that interpretation to the contentions.

RULES OF PRACTICE: INTERLOCUTORY APPEALS
(REFERRALS)

Appeal boards are empowered to decline the acceptance of licensing board referrals.

RULES OF PRACTICE: INTERLOCUTORY APPEALS

Regardless of whether presented on "certification" pursuant to 10 CFR 2.718(i) or by referral pursuant to 10 CFR 2.730(f), the question of whether interlocutory

appellate review of an issue should be undertaken turns on whether a failure to address that issue would seriously harm the public interest, result in unusual delay or expense, or affect the basic structure of the proceeding in some pervasive or unusual manner. *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-634, 13 NRC 96, 99 (1981).

RULES OF PRACTICE: ADMISSIBILITY OF CONTENTIONS

Under 10 CFR 2.714, a licensing board is not authorized to admit conditionally, for *any* reason, a contention that falls short of meeting the specificity requirements of the Section.

RULES OF PRACTICE: CONTENTION REQUIREMENTS FOR INTERVENTION

Neither Section 189a. of the Atomic Energy Act nor Section 2.714 of the Commission's Rules of Practice permits an intervention petitioner to file a vague, unparticularized contention, followed by an endeavor to flesh it out through discovery against the applicant or the NRC staff. Rather, an intervention petitioner has an ironclad obligation to examine the publicly available documentary material pertaining to the facility in question with sufficient care to enable it to uncover any information that could serve as a foundation for a specific contention. *Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-107, 6 AEC 188, 192, (1973), *affirmed* CLI-73-12, 6 AEC 241 (1973), *affirmed sub nom.* *BPI v. AEC*, 502 F.2d 424 (D.C. Cir. 1974).

REGULATIONS: INTERPRETATION

The wording of a regulation generally takes precedence over any contradictory suggestion in its administrative history.

ATOMIC ENERGY ACT: RIGHT TO HEARING

The hearing mandate of Section 189a. of the Atomic Energy Act does not confer the automatic right of intervention upon anyone; rather, the Commission may condition the exercise of that right upon the meeting of reasonable procedural requirements. *BPI v. AEC*, 502 F.2d 424, 428 (1974).

RULES OF PRACTICE: HEARING REQUIREMENT

No procedural requirement can lawfully operate to preclude from the very outset a hearing under Section 189a. of the Atomic Energy Act on an issue both within the scope of the petitioner's interest and germane to the outcome of the proceeding.

RULES OF PRACTICE: ADMISSIBILITY OF CONTENTIONS

The determination whether to accept an untimely contention which was susceptible of filing within the period prescribed by the Rules of Practice involves a consideration of all five 10 CFR 2.714(a) factors — and not just the reason (substantial or not as the case may be) why a petitioner did not meet the deadline.

RULES OF PRACTICE: ADMISSIBILITY OF CONTENTIONS

In determining whether to accept an untimely contention under 10 CFR 2.714(a), if the contention could not have been asserted with sufficient specificity during the period prescribed by the Rules of Practice due to the non-existence or public unavailability of relevant documents, that factor must be deemed controlling; it is not amenable to being overridden by the other 2.714(a) factors such as that relating to the broadening of the issues.

APPEARANCES

Messrs. J. Michael McGarry III, and Malcolm H. Philips, Jr., Washington, D.C., and **William L. Porter and Albert V. Carr, Jr.,** and **Ms. Ellen T. Ruff,** Charlotte, North Carolina, for the applicants, Duke Power Company, *et al.*

Mr. Robert Guild, Columbia, South Carolina, for the intervenor, Palmetto Alliance.

Mr. George E. Johnson for the Nuclear Regulatory Commission staff.

MEMORANDUM AND ORDER

In its June 30, 1982 order in this operating license proceeding,¹ the Licensing Board referred to us, under 10 CFR 2.730(f), three rulings it had earlier made in acting upon the petitions for leave to intervene filed by the Carolina Environmental Study Group (CESG), the Palmetto Alliance (Palmetto) and the Charlotte-Mecklenburg Environmental Coalition.² Those rulings conditionally admitted to the proceeding certain contentions advanced in the CESG and Palmetto petitions, notwithstanding the Board's determination that the contentions did not satisfy the specificity requirements of 10 CFR 2.714(b). Specifically, we are asked to pass interlocutory judgment upon:³

- (1) The Board's conditional admission, absent the specificity required by 10 CFR §2.714, of 10 contentions based on the unavailability of Staff or Applicant documents which might allow the further particularization of the contentions. These contentions were admitted subject to further specification after pertinent documents become available, but the Board ruled that the late-filing criteria of 10 CFR §2.714(a) would not be applied.
- (2) The Board's conditional admission of six relatively vague contentions, subject to the provision of greater specificity after completion of discovery.
- (3) The Board's ruling that the late-filing criteria of 10 CFR 2.714(a) do not apply to contentions based on information or analysis in documents not previously available and filed promptly after such documents are issued.⁴

Acting upon our invitation to all parties, the applicants, NRC staff and one of the intervenors (Palmetto) have filed memoranda addressed to both (1) whether the referral should be accepted; and (2) how the referred rulings should be resolved on the merits. The applicants and staff press for examination and reversal of the rulings at this time. On the other hand, Palmetto opposes interlocutory review; in the alternative, it urges affirmance.

¹ LBP-82-50, 15 NRC 1746 (1982).

² LBP-82-16, 15 NRC 566 (1982).

³ LBP-82-50, *supra*, 15 NRC at 1754.

⁴ The total of sixteen contentions alluded to in the referred questions are, as we understand it, those identified at pp. 2-4 of the applicants' March 31, 1982 motion for reconsideration or certification, in which the staff joined. In an earlier filing, however, the staff identified two additional contentions to which the referred questions also might possibly relate. As will be seen, the precise number of contentions involved is of no present moment.

I

A. It is well-settled that we are empowered to decline the acceptance of a Licensing Board referral. *Public Service Co. of Indiana, Inc.* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-405, 5 NRC 1190, 1191 (1977) and cases there cited; *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-634, 13 NRC 96 (1981). And, as stressed in ALAB-634, it is equally established that

[i]nterlocutory appeals are not favored in Commission any more than in judicial practice. Whether review should be undertaken on “certification” or by referral before the end of the case turns on whether a failure to address the issue would seriously harm the public interest, result in unusual delay or expense, or affect the basic structure of the proceeding in some pervasive or unusual manner.

13 NRC at 99 (footnotes omitted).⁵

A ruling that does no more than admit a contention to a proceeding — whether absolutely or conditionally — has a low potential for meeting that standard. To be sure, interlocutory review of such a ruling might obviate litigation of the contention and, consequently, accelerate the progress of the hearing.⁶ This same consideration is present, however, whenever contentions are admitted over objection; thus, it cannot be said that the avoidance of *unusual* delay is involved. *Cleveland Electric Illuminating Co., et al.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-675, 15 NRC 1105, 1113-14 (1982).⁷ In this connection, it is noteworthy that the Rules of Practice permit an *appeal* from an order granting an intervention petition only on a claim that the petition “should have been wholly denied.” 10 CFR 2.714a(c). Thus, the Commission has explicitly declined to provide an entitlement to obtain interlocutory appellate relief in circumstances where (as here) the complaint is that some, but not all, of the admitted contentions should have been rejected.⁸

Nor is there much latitude for a serious claim that the acceptance of a particular contention will have a pervasive effect on the basic structure of the proceeding. To the contrary, it is difficult to see how such a step — no matter how improvident it

⁵ 10 CFR 2.730(f) itself makes specific reference to the prevention of “detriment to the public interest or unusual delay or expense”.

⁶ Of course, in the instance of a contention admitted conditionally (whether permissibly or not), there is no assurance that it will be litigated; the Licensing Board may later decide to withdraw its admission. Further, even an unconditionally admitted contention is subject to pretrial summary disposition under 10 CFR 2.749.

⁷ Many other types of interlocutory orders likewise may slow somewhat the progress of a proceeding. Accordingly, were the potential for some delay sufficient in itself to justify immediate appellate review, little would be left of the general proscription in 10 CFR 2.730(f) against interlocutory appeals.

⁸ In order to be allowed intervention, a petitioner must advance at least one acceptable contention. 10 CFR 2.714(b). See pp. 465-466, *infra*.

might be — could affect that structure in any material way. This is especially so where the asserted vice of the contention lies simply in its lack of precision.

B. For the foregoing reasons, we are disinclined at this stage of the proceeding to examine each of the contentions in issue here and to make individual determinations on their admissibility. It is our understanding, however, that the Licensing Board has not called upon us to pursue that course. Rather, although arising in the context of specific contentions, the referred rulings appear to pose generic questions. As their formulation by the Board below reflects (see p. 463, *supra*), these questions go to the circumstances, if any, in which a licensing board may allow the conditional admission of a contention that it has found to fall short of the degree of specificity mandated by 10 CFR 2.714(b). And, as we have been told without contradiction, they have immediate recurring importance but, for practical reasons, will escape appellate scrutiny once the initial decision has issued.

In partial justification of the referral, the Licensing Board alluded⁹ to the Commission's *Statement of Policy on Conduct of Licensing Proceedings* issued last year. That statement exhorts licensing boards to refer or certify promptly to us or the Commission "significant legal or policy question[s] * * * on which Commission guidance is needed". CLI-81-8, 13 NRC 452, 456 (1981). The questions at hand are legal in character and, to repeat, have generic implications. Further, insofar as we can determine, they have not previously been squarely addressed on an appellate level.

Because of these considerations, we have decided to accept the referral. This is not to be taken, however, as a repudiation of our general policy disfavoring interlocutory review of licensing board action on specific contentions. That policy remains intact. Indeed, as will be seen, we confine ourselves in this opinion to an interpretation of the governing Rules of Practice. The application of that interpretation to the contentions in issue is left to the Licensing Board.

II

A. Central to our consideration of the referred rulings is 10 CFR 2.714(b), the provision in the Rules of Practice that is directly concerned with the filing and admission of contentions. That Section reads as follows:

Not later than fifteen (15) days prior to the holding of the special prehearing conference pursuant to §2.751a, or where no special prehearing conference is held, fifteen (15) days prior to the holding of the first prehearing conference, the petitioner shall file a supplement to his petition to intervene which must include a list of the contentions which petitioner seeks to have litigated in the matter, and the bases for each contention set

⁹ LBP-82-50, *supra*, 15 NRC at 1754.

forth with reasonable specificity. A petitioner who fails to file such a supplement which satisfies the requirements of this paragraph with respect to at least one contention will not be permitted to participate as a party. Additional time for filing the supplement may be granted based upon a balancing of the factors in paragraph (a)(1) of this section.

The factors mentioned in the last sentence are the five that govern the grant or denial of untimely intervention petitions:

- (i) Good cause, if any, for failure to file on time.
- (ii) The availability of other means whereby the petitioner's interest will be protected.
- (iii) The extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record.
- (iv) The extent to which the petitioner's interest will be represented by existing parties.
- (v) The extent to which the petitioner's participation will broaden the issues or delay the proceeding.

Nothing in the terms of Section 2.714(b) explicitly vests a licensing board with the power to admit an unacceptably vague or imprecise contention conditionally, subject to later revision upon receipt of additional information. Rather, as we read it, the Section conveys the clear message that, in order to be admitted, the contention must meet the "requirements of this [Section]"; *i.e.*, it must set forth its bases "with reasonable specificity". Moreover, the administrative history of the Section precludes any suggestion that the Commission intended an implicit exception to the specificity requirements in circumstances where, because of a lack of available information, it is not possible for the petitioner to meet those requirements at the time its contentions are due.

Prior to 1978, intervention petitions had to set forth both the petitioner's interest and the contentions that it proposed to litigate. 10 CFR 2.714(a),(b) (1978 ed.). Effective May 26, 1978, Section 2.714 was amended to allow the petitioner to defer the filing of contentions until a later date. Under the now prevailing practice, an intervention petition submitted in response to a notice of hearing or opportunity for hearing need only establish the petitioner's interest. 10 CFR 2.714(a)(2). As we have seen, its contentions are to be advanced in a supplement to the petition, due at least fifteen days prior to the holding of either the special or first prehearing conference.¹⁰

In the accompanying Statement of Consideration, the Commission explained that the primary consideration underlying the 1978 amendment was that "experience has indicated that 30 days is often insufficient for potential petitioners to frame and support adequate contentions". 43 *Fed. Reg.* 17798, 17799 (April 26,

¹⁰ In an operating license proceeding, a special prehearing conference is mandatory. 10 CFR 2.751a.

1978).¹¹ It further explicitly acknowledged that, as “new information * * * comes to light after petitioners have been admitted, such as information in the Commission Staff’s safety evaluation or environmental impact statements”, there may be occasion to expand or amend contentions. *Ibid.* On this score, the Statement of Consideration noted that the Commission was “clarifying the requirements in regard to both late filings of petitions and amending, expanding and deleting contentions” by making the acceptability of such action subject to a balancing of the five Section 2.714(a) factors. *Ibid.*

Given the terms and history of Section 2.714(a), we are compelled to the conclusion that a licensing board is not authorized to admit conditionally, for *any* reason, a contention that falls short of meeting the specificity requirements. The Commission might, of course, have chosen to confer such authority to accommodate an existing lack of sufficient available information to enable the petitioner to fulfill those requirements. Instead, the Commission opted for a different procedure. Whether or not in agreement with that election, the adjudicatory boards must respect and abide by it.

B. It does not follow from the foregoing that Section 2.714(b) can serve to bar the later assertion of a new contention founded upon information not in existence or publicly available 15 days prior to the special prehearing conference, but which is nonetheless an essential element of the license application or the staff’s prehearing review. Indeed, if so interpreted, the Section would sanction an unfair result in contravention of hearing rights conferred by Section 189a. of the Atomic Energy Act of 1954, *as amended*, 42 U.S.C. 2239(a).

1. In *Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-107, 6 AEC 188 (1973), *affirmed* CLI-73-12, 6 AEC 241 (1973), *affirmed sub nom. BPI v. AEC*, 502 F.2d 424 (D.C. Cir. 1974), we rejected the petitioners’ challenge to the legality of the contentions requirement in light of Section 189a. of the Act. One of the prongs of the challenge was that it was not possible for petitioners “to state specific contentions until after they have been permitted to intervene and to avail themselves of discovery procedures”.¹² Our principal response was that “there is abundant information respecting the particular facility available to the public at the time of the publication of the notice of

¹¹ The reference to that time period was in recognition of the fact that “[c]urrent practice has generally provided 30 days between the date a notice of hearing or notice of proposed action on an application for a nuclear power plant construction permit or operating license is published in the *FEDERAL REGISTER* and the last day for filing of timely petitions for leave to intervene”. 43 *Fed. Reg.* at 17799.

¹² At that time, intervention petitions had to set forth contentions as well as establish the petitioner’s standing. See p. 466, *supra*. In addition, then as now, discovery on the subject matter of a contention could be obtained only after the contention had been admitted to the proceeding. 10 CFR 2.740; *Wisconsin Electric Power Co.* (Point Beach Nuclear Plant, Unit No. 2), ALAB-31, 4 AEC 689, 690-91 (1971).

hearing or of an opportunity for hearing — including at least the applicant's detailed safety analysis and environmental reports". 6 AEC at 192.¹³

Implicit in this observation was the belief that an intervention petitioner has an ironclad obligation to examine the publicly available documentary material pertaining to the facility in question with sufficient care to enable it to uncover any information that could serve as the foundation for a specific contention. Stated otherwise, neither Section 189a. of the Act nor Section 2.714 of the Rules of Practice permits the filing of a vague, unparticularized contention, followed by an endeavor to flesh it out through discovery against the applicant or staff. Nothing that has transpired since *Prairie Island* was decided prompts us to reconsider that view. To the contrary, the fact that, in the interim, the Commission has seen fit to put off the filing of contentions until the virtual eve of the prehearing conference lends additional support to what we there concluded.

But equally implicit in the *Prairie Island* treatment of the specificity requirements was the assumption that, prior to the special prehearing conference, the documentation necessary to fashion an adequately particularized contention both has come into existence and is available to a potential intervenor upon diligent search. For a petitioner can scarcely be expected to forecast the content of documents that it has not examined and cannot examine because they have not yet surfaced. In short, in order to put forth a specific contention respecting, for example, the adequacy of an environmental impact statement or an emergency plan, one must have had the *opportunity* to examine the statement or plan. Indeed, without that opportunity, it is not possible for a petitioner even to determine whether there is warrant for a contention on the subject — *i.e.*, whether the impact statement or emergency plan is open to a claim of insufficiency on some colorable ground.¹⁴

2. With these considerations in mind, we turn to the question of precisely how a licensing board is to deal with the circumstance that, at the time of the special prehearing conference, one or more documents bearing directly upon the licensing action in issue have not as yet come into existence or become publicly available.

At the outset, we note a possible inconsistency between Section 2.714(b) as written and the underlying Statement of Consideration with respect to when a

¹³ In an accompanying footnote, we elaborated upon this point (with particular reference to the content of the central (Washington, D.C.) and local public document rooms).

¹⁴ In this connection, we summarily reject the suggestion in the applicants' memorandum to us (at pp. 41-42) that a sufficiently specific contention regarding emergency planning for Catawba can be founded upon (1) the Commission's regulations and regulatory guides; (2) already available *generic* North and South Carolina state plans; and (3) existing emergency plans for *other* facilities in those two States. There is likewise no merit to the staff's similar argument (at p. 18 of its submission) that an intervenor can ascertain whether the *staff* has properly fulfilled its role in the discharge of *this agency's* responsibilities under the National Environmental Policy Act by examining the *applicants'* environmental report. (We do not, of course, reach the question whether the availability of the environmental report or other materials might trigger an obligation to file environmental contentions *not* directed to the adequacy of the staff's performance of its NEPA responsibilities.)

licensing board is to make its determination on allowing new contentions grounded upon previously unavailable information. For its part, the Section authorizes the board to grant “[a]dditional time for filing the supplement” based upon a balancing of the Section 2.714(a) factors. This language means that, prior to the deadline for the supplement, on an adequately supported motion the board may extend that deadline either as to certain or all possible contention subjects. Thus, for example, a petitioner might be required to file a timely supplement setting forth those contentions as to which sufficient information already existed but given leave to await the subsequent release of the emergency plan before putting in (by way of further supplement) any contentions it might have with regard to the plan.¹⁵ On the other hand, the Statement of Consideration seems to suggest a Commission contemplation that, instead of granting additional time in advance, the board will take no action until the new contention is actually filed and then will look to the Section 2.714(a) factors in deciding whether to entertain it. See 43 *Fed. Reg.* at 17799.

Obviously, the wording of a regulation generally takes precedence over any contradictory suggestion in its administrative history. In any event, as we see it, irrespective of when a licensing board is called upon to act, as a matter of law a contention cannot be rejected as untimely if it (1) is wholly dependent upon the content of a particular document; (2) could not therefore be advanced with any degree of specificity (if at all) in advance of the public availability of that document; and (3) is tendered with the requisite degree of promptness once the document comes into existence and is accessible for public examination.

We perceive no conflict between this conclusion and the Commission’s direction in Section 2.714(b) that there be a balancing of the five Section 2.714(a) factors. Of necessity, the Commission intended that balancing to be performed in obedience to the proviso in Section 189a. of the Atomic Energy Act that, in proceedings of this type, it “shall grant a hearing upon the request of any person whose interest may be affected by the proceeding.” True enough, the statutory mandate “does not confer the automatic right of intervention upon anyone”; rather, the Commission may condition the exercise of that right upon the meeting of reasonable procedural requirements. *BPI v. AEC*, *supra*, 502 F.2d at 428. But no procedural requirement can lawfully operate to preclude from the very outset a hearing on an issue both within the scope of the petitioner’s interest and germane to the outcome of the proceeding. If it had that effect, the requirement would not merely be patently unreasonable but, as well, would render negatory Section 189a. hearing rights. *Cf. Manhattan General Equipment Co. v. Commissioner of Internal Revenue*, 297 U.S. 129, 134-35 (1936); *United Mine Workers v. Kleppe*, 561 F.2d 1258, 1263 (7th Cir. 1977).

¹⁵ If the petitioner represented to the board that the only matters it might wish to put into controversy related to the as yet unavailable emergency plan, then the obligation to file any supplement might be deferred pending the plan’s release.

In sum, in the instance of a contention that was susceptible of filing within the period prescribed by the Rules of Practice, the determination whether to accept it on an untimely basis involves a consideration of all five Section 2.714(a) factors — and not just the reason (substantial or not as the case may be) why the petitioner did not meet the deadline. See Statement of Consideration accompanying amended Section 2.714(b), *supra*, 43 *Fed. Reg.* at 17799, citing *Nuclear Fuel Services, Inc.* (West Valley Reprocessing Plant), CLI-75-4, 1 NRC 273 (1975). Where, however, the nonexistence or public unavailability of relevant documents made it impossible for a sufficiently specific contention to have been asserted at an earlier date, that factor must be deemed controlling; it is not amenable to being overridden by other factors such as that relating to the broadening of the issues. As scarcely requires further extended discussion, any different result would countenance placing the petitioner in a classic “catch-22” situation¹⁶ — which, once again, the statute forbids and our regulations cannot be thought to have authorized.¹⁷

The referral is *accepted* and the cause is *remanded* to the Licensing Board for reconsideration of LBP-82-16 and LBP-82-50 in light of the views expressed in the foregoing opinion.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

¹⁶ The Licensing Board itself noted this fact. See LBP-82-16, *supra*, 15 NRC at 571. The Board further, and correctly, pointed out that a rule allowing the rejection on untimeliness grounds of a contention that could not have been earlier filed because of the nonavailability of applicant-sponsored documents would encourage applicants to delay the completion of those documents. *Id.* at 573. The same might be said with regard to staff documents such as the environmental impact statement.

¹⁷ To avoid possible misunderstanding, we stress anew that both the Licensing Board's rulings and the above discussion are in the context of the unavailability of documents associated with the license application and the staff's prehearing review thereof (*e.g.*, the applicant's emergency plan and the staff's environmental impact statement). An intervenor's endeavor to inject a belated contention grounded upon newly acquired information not so associated (such as a just-executed affidavit asserting for the first time quality assurance deficiencies during the construction of the facility) is an entirely different matter.

It is also worthy of reemphasis that the referred rulings likewise do not embrace any Licensing Board determination respecting (1) whether a particular submitted contention was specific enough to satisfy the Section 2.714(a) requirements; or (2) whether there was sufficient publicly available information to enable the formulation prior to the prehearing conference of an adequate contention on a particular subject. In any event, as previously observed, determinations of that stripe are not suitable candidates for an interlocutory appellate review.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

**Stephen F. Ellperln, Chairman
Dr. W. Reed Johnson
Gary J. Edles**

In the Matter of

Docket No. 50-537

**UNITED STATES DEPARTMENT OF
ENERGY
PROJECT MANAGEMENT CORPORATION
TENNESSEE VALLEY AUTHORITY
(Clinch River Breeder Reactor
Plant)**

August 25, 1982

The Appeal Board denies a petition for directed certification of an unpublished Licensing Board order (August 5, 1982) which sets forth the scope of and schedule for evidentiary hearings in the limited work authorization proceeding for this facility.

**LIMITED WORK AUTHORIZATION: REQUIRED
DETERMINATIONS**

A limited work authorization (LWA-1) allows preliminary construction work to be undertaken at the applicant's risk, pending completion of later hearings covering radiological health and safety issues. See 10 CFR 50.10(e)(1); *Public Service Co. of Oklahoma, et al.* (Black Fox Station, Units 1 and 2), ALAB-573, 10 NRC 775, 778 (1979). Before an LWA-1 can be granted, the staff must have issued the final environmental impact statement relating to the construction of the facility. Moreover, the Licensing Board must have made all the environmental findings required for issuance of a construction permit and "determined that . . . there is reasonable assurance that the proposed site is a suitable location for a reactor of the

general size and type proposed from the standpoint of radiological health and safety considerations." 10 CFR 50.10(e)(2).

RULES OF PRACTICE: INTERLOCUTORY APPEALS

Discretionary interlocutory review will be granted only sparingly, and then only when a licensing board's action either (a) threatens the party adversely affected with immediate and serious irreparable harm which could not be remedied by a later appeal, or (b) affects the basic structure of the proceeding in a pervasive or unusual manner. *Public Service Electric and Gas Co.* (Salem Nuclear Generating Station, Unit 1), ALAB-588, 11 NRC 533, 536 (1980). Especially in light of the paucity of construction permit applications, legal issues involving the timing of the admission of evidence at LWA hearings cannot be considered recurring issues of great importance to the proper functioning of the licensing process.

RULES OF PRACTICE: INTERLOCUTORY APPEALS (CERTIFICATION)

An appeal board will be particularly reluctant to grant a request for directed certification where the question for which certification has been sought involves the scheduling of hearings or the timing and admissibility of evidence, see *Toledo Edison Co. and Cleveland Electric Illuminating Co.* (Davis-Besse Nuclear Power Station, Unit 1), ALAB-314, 3 NRC 98, 99-100 (1976), and will be inclined to do so only to entertain a claim that a board abused its discretion by setting a hearing schedule that deprives a party of its right to procedural due process. *Public Service Co. of Indiana, Inc.* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-459, 7 NRC 179, 188 (1978). See generally *Houston Lighting & Power Co., et al.* (South Texas Project, Units 1 and 2), ALAB-637, 13 NRC 367, 370-71 (1981).

APPEARANCES

Ms. Ellyn R. Weiss, Ms. Barbara A. Finamore, Mr. Dean Tousley and Mr. S. Jacob Scherr, Washington, D.C., for intervenors Natural Resources Defense Council, Inc., and the Sierra Club.

Messrs. George L. Edgar and William D. Luck, Washington, D.C., for applicants Project Management Corporation, United States Department of Energy, and Tennessee Valley Authority.

Mr. Bradley W. Jones for the Nuclear Regulatory Commission staff.

MEMORANDUM AND ORDER

The Natural Resources Defense Council, Inc. (NRDC), and the Sierra Club petition for directed certification of an August 5, 1982 unpublished order of the Licensing Board. See 10 CFR 2.718(i), 2.785(b)(1); *Public Service Co. of New Hampshire, et al.* (Seabrook Station, Units 1 and 2), ALAB-271, 1 NRC 478, 482-83 (1975). That order sets forth the scope and schedule for evidentiary hearings in the Limited Work Authorization proceeding (LWA-1) for the Clinch River Breeder Reactor Project (CRBRP).¹ In particular and insofar as pertinent here, the Licensing Board's order adhered to an earlier scheduling order that called for evidentiary hearings to begin August 23, 1982 on contentions related to radiological site suitability. Contentions involving the National Environmental Policy Act (NEPA), 42 U.S.C. 4321 *et seq.*, and the supplement to the Final Environmental Statement (FES) are to await issuance of the FES supplement and are to be the subject of a second phase of hearings. Under the Board's order no party will be prohibited from putting forth evidence with respect to the FES at the time of the second phase hearings because of its failure to produce the evidence at the first phase. The Board did, however, reject petitioners' position that no hearings whatsoever could begin until completion of the FES supplement. Order of August 5, 1982, at 4-6.

NRDC and the Sierra Club have asked that we take up two questions at this time — first, whether (as they urge) 10 CFR 2.761a precludes *any* evidentiary hearings on a limited work authorization request prior to issuance of the FES supplement, and second, whether the draft supplement now being circulated for public comment renders the 1977 FES non-final for purposes of that regulation.²

¹ A limited work authorization allows preliminary construction work to be undertaken at the applicants' risk, pending completion of later hearings covering radiological health and safety issues. See 10 CFR 50.10(e)(1); *Public Service Co. of Oklahoma, et al.* (Black Fox Station, Units 1 and 2), ALAB-573, 10 NRC 775, 778 (1979). Before an LWA-1 can be granted, the staff must have issued the final environmental impact statement relating to the construction of the facility. Moreover, the Licensing Board must have made all the environmental findings required for issuance of a construction permit and "determined that . . . there is reasonable assurance that the proposed site is a suitable location for a reactor of the general size and type proposed from the standpoint of radiological health and safety considerations." 10 CFR 50.10(e)(2). The Commission has granted applicants a partial exemption from the requirements of 10 CFR 50.10, allowing them to initiate certain site preparation activities. CLI-82-23, 16 NRC 412 (1982).

The CRBRP proceeding began with an application filed with this Commission in 1975. The NRC staff issued its FES in February, 1977. The proceeding was suspended in 1977 in accordance with President Carter's decision not to pursue the project. It was revived by President Reagan's October 1981 change in policy. At the Department of Energy's request, the NRC resumed licensing proceedings in February 1982. A draft supplemental FES was issued in July 1982 and is now being circulated for public comment. See generally NUREG-0139 (Supp. No. 1), "Draft Supplement to Final Environmental Statement Related to Construction and operation of Clinch River Breeder Reactor Plant" (July 1982) at xxii, 1-1.

² 10 CFR 2.761a provides in pertinent part:

[T]he presiding officer shall, unless the parties agree otherwise or the rights of any party would be prejudiced thereby, commence a hearing on issues covered by §50.10(e)(2)(ii) and Part 51 of this chapter as soon as practicable after issuance by the staff of its final environmental impact statement but no later than thirty (30) days after issuance of such statement. . . .

The request for directed certification is opposed by the NRC staff and the applicants. They argue that the standards for directed certification have not been met and that 10 CFR 2.761a is only an outer limit on when hearings should begin, not a bar to beginning hearings earlier. Staff and applicants contend that, with the exception of staff testimony on environmental issues, 10 CFR 51.52(a)³ permits all parties to present testimony on all issues prior to issuance of a final environmental impact statement.⁴

We have often commented on the stringent standard a request for directed certification must meet:

Our decisions establish that discretionary interlocutory review will be granted only sparingly, and then only when a licensing board's action either (a) threatens the party adversely affected with immediate and serious irreparable harm which could not be remedied by a later appeal, or (b) affects the basic structure of the proceeding in a pervasive or unusual manner.

Public Service Electric and Gas Co. (Salem Nuclear Generating Station, Unit 1), ALAB-588, 11 NRC 533, 536 (1980) (footnotes omitted). We have been particularly reluctant to step in where the question for which certification has been sought involves the scheduling of hearings or the timing and admissibility of evidence. The reason for this is apparent:

During the course of a lengthy and involved . . . proceeding, a licensing board almost inevitably will be called upon to make numerous determinations respecting what evidence is permissible and in what procedural framework it may be adduced. Were we to allow ourselves to be cast in the role of a day-to-day monitor of those determinations, we would have little time for anything else. Although the applicants urge that there are exceptional circumstances present here which warrant interlocutory involvement on our part, we do not perceive them. The most that can be said is that, if on review of the eventual initial decision we should conclude that the Board below was wrong, a new hearing might have to be ordered. But it is also possible that the ultimate result will moot the questions which the applicants would have us resolve immediately.

* * *

³ 10 CFR 51.52(a) provides:

In any proceeding in which a draft environmental impact statement is prepared pursuant to this part, the draft will . . . be made available to the public at least fifteen (15) days prior to the time of any relevant hearing. At any such hearing, the position of the Commission's staff on matters covered by this part will not be presented until the final environmental impact statement is furnished to the Environmental Protection Agency and commenting agencies and made available to the public. Any other party to the proceeding may present its case on NEPA matters as well as on radiological health and safety matters prior to the end of the fifteen (15) day period.

⁴ NRC Staff's Response to Petition for Directed Certification (August 20, 1982); Applicants' Response to Petition for Directed Certification (August 19, 1982).

In the last analysis, the potential for an appellate reversal is always present whenever a licensing board (or any other trial body) decides significant procedural questions adversely to the claims of one of the parties. The Commission must be presumed to have been aware of that fact when it chose to proscribe interlocutory appeals (10 CFR 2.730(f)). That proscription thus may be taken as an at least implicit Commission judgment that, all factors considered there is warrant to assume the risks which attend a deferral to the time of initial decision of the appellate review of procedural rulings made during the course of trial. Since a like practice obtains in the federal judicial system, that judgment can scarcely be deemed irrational.

Toledo Edison Co. and Cleveland Electric Illuminating Co. (Davis-Besse Nuclear Power Station, Unit 1), ALAB-314, 3 NRC 98, 99-100 (1976).⁵

It is not enough to warrant our review at this stage that the questions posed by NRDC and the Sierra Club involve the interpretation of NRC regulations or a generalized issue arising under the National Environmental Policy Act. Especially in light of the paucity of construction permit applications neither issue can be considered a recurring one of great importance to the proper functioning of the licensing process. All that hinges upon their answer is the timing of the admission of evidence. Compare *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460, 465. We are unpersuaded that our disinclination to review those questions at this time threatens the petitioners with irreparable harm or affects the basic structure of the proceeding in a pervasive or unusual manner.

The petition for directed certification is *denied*.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

⁵ See also *Public Service Co. of Indiana, Inc.* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-459, 7 NRC 179, 188 (1978):

[W]e enter the scheduling thicket cautiously. We are inclined to do so only to entertain a claim that a board abused its discretion by setting a hearing schedule that deprives a party of its right to procedural due process [footnote omitted].

See generally *Houston Lighting & Power Co., et al.* (South Texas Project, Units 1 and 2), ALAB-637, 13 NRC 367, 370-71 (1981).

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Herbert Grossman, Chairman
Dr. Frank F. Hooper
Gustave A. Linsenberger

In the Matter of

Docket No. 50-395-OL

SOUTH CAROLINA ELECTRIC AND
GAS COMPANY, *et al.*

(Virgil C. Summer Nuclear Station,
Unit 1)

August 4, 1982

In this Supplemental Partial Initial Decision the Licensing Board authorizes the issuance of a full-term operating license subject to certain conditions relating to seismic safety, emergency preparedness and steam generator tube problems. The Board considered issues involving anticipated transients without scram (ATWS), emergency preparedness, quality assurance/quality control, and health effects from the operation of the facility and from the uranium fuel cycle.

TECHNICAL ISSUES DISCUSSED

Health effects

Risk estimators

Linear model and super linear model

APPEARANCES

On behalf of the Applicants:

Joseph B. Knotts, Jr., Esq., Donald K. Dankner, Esq., and Jeb Sanford, Esq., Debevoise & Liberman, Washington, D.C.; and **Randolph R. Mahan, Esq.,** Columbia, South Carolina

On behalf of the State of South Carolina:

Richard P. Wilson, Esq., Assistant Attorney General, Columbia, South Carolina

On behalf of the NRC Staff:

Steven Goldberg, Esq., and Mitzi A. Young, Esq., Washington, D.C.

On behalf of the Intervenor:

Brett Allen Bursey, pro se, Little Mountain, South Carolina

On behalf of the Federal Emergency Management Agency (FEMA):

Daniel P. Cosgrove, Esq., Assistant General Counsel Washington, D.C.

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SUPPLEMENTAL PARTIAL INITIAL DECISION

(Remaining Issues — Nonseismic Issues)

I. INTRODUCTION

This matter is a contested operating license proceeding within the meaning of 10 CFR §2.4(n). This partial initial decision considers the application for issuance of a facility operating license to the South Carolina Electric & Gas Company ("SCE&G") and the South Carolina Public Service Authority ("SCPSA") (hereinafter "Applicants") to authorize the operation of the Virgil C. Summer Nuclear Station, Unit 1. The facility consists of a single pressurized water reactor located on SCE&G's site in Fairfield County, South Carolina. The reactor is designed to operate at core power levels up to 2785 thermal megawatts, with a net electrical output of approximately 900 megawatts. The facility is adjacent to Monticello Impoundment, an SCE&G-owned and operated pumped storage hydroelectric project (Federal Energy Regulatory Commission Project 1894), about one mile east of the Broad River and approximately twenty-six (26) miles northwest of Columbia, South Carolina.

In a Partial Initial Decision issued on July 20, 1982 (LBP-82-55, 16 NRC 225), covering the seismic issues in dispute, we discussed the course of these proceedings. We will not repeat that discussion. We found in favor of plant safety on those seismic issues subject to Applicants' meeting certain conditions during the plant's first year of operation. Those conditions involved continued seismic monitoring and a confirmatory program involving seismic safety margins of plant equipment and components.

In this Supplemental Partial Initial Decision, we cover the remaining issues: anticipated transients without scram (ATWS); financial qualifications; emergency preparedness; quality control; and health effects. We resolve these matters in favor of plant safety, subject to certain other conditions which must be met.

We authorize the granting of an operating license subject to all of these conditions.

II. SUMMARY DISPOSITION MOTIONS

On May 7, 1981, the NRC Staff filed motions for summary disposition of Intervenor Brett A. Bursey's Contentions 2, 3 and 4(b). On the same day, Applicants filed motions for summary disposition of Intervenor's Contentions 3 and 10. On May 27, 1981, Staff and Applicants filed responses supporting each other's motions. On May 28, 1981 and June 2, 1981, Intervenor Bursey filed responses in opposition to the May 7, 1981 motions of Staff and Applicants.

In our Order of June 19, 1981 (unpublished), we granted summary disposition only on Contention 3, regarding anticipated transients without scram (ATWS), and denied summary disposition on all of the other contentions. Because the evidentiary hearing had been scheduled to begin on June 22, 1981, we decided these matters with minimal discussion, stating that our reasons would be fully discussed in the Initial Decision following the conclusion of the hearing. That discussion follows.

A. Financial Qualifications

Contention 2 states that:

- (a) The Applicant lacks the financial qualifications necessary to safely operate and decommission the Summer station in compliance with NRC rules and regulations;
- (b) The sum allocated by the Applicant for decommissioning of the Summer Plant (less than \$10 million) is grossly inadequate and does not conform to the requirements of 10 CFR §50.33(f).

Staff's motion met the requirements of 10 CFR §2.749 with respect to the form and content for summary disposition motions. Its affiant, M. L. Karłowicz, Jr., whose professional qualifications seem to be appropriate, appended Section 20 of Supplement I of the Staff's Safety Evaluation Report (NUREG-0717, dated April, 1981) which he prepared, and in which the Staff concluded that Applicants are financially qualified to operate and decommission the Summer facility.

Mr. Bursey's opposing response, while meeting the requirements of 10 CFR §2.749, appended the affidavit of Dr. J. C. Ruoff, whose qualifications do not support his implied expertise in financial analysis. Despite this, however, the affidavit raised matters that seemed to controvert or place in question portions of Staff's affidavit. For this reason, the Board decided that it was desirable to test the reasonableness of Applicants' financial posture through examination at the evidentiary hearing. Accordingly, Staff's motion was denied.

Although this contention was heard, the Commission's recent amendment to its regulations eliminated consideration of financial qualifications in operating license proceedings for power reactors. (*Elimination of Review of Financial Qualifications of Electric Utilities in Licensing Hearings for Nuclear Power Plants*, 47 *Fed. Reg.* 13250, March 31, 1982.)

On April 7, 1982, Staff filed a motion to dismiss Contention 2 on the basis of the amended regulation. Applicants filed a response on April 21, 1982 supporting Staff's motion.

We grant Staff's motion and make no findings on this issue.

B. Anticipated Transients Without Scram

Contention 3 states that:

The Applicant has not met the requirements of the NRC Staff to assure that the probability of occurrence of an anticipated transient without scram (ATWS) event is acceptably small.

Staff's and Applicants' motions met the requirements of 10 CFR §2.749. Staff appended the affidavit of one of its project managers, W. F. Kane, who participated in and supervised the preparation of Section 15.3.5 of the Staff's SER (NUREG-0717, dated February, 1981), wherein Staff opined that the Summer facility can operate without undue risk from ATWS events. Staff's opinion was based on the existence of specific operator training for mitigating the consequences of such events, the imposition of any plant modifications that may be required resulting from the Commission's rulemaking on ATWS, and the Staff's finding that there is an acceptably small risk from ATWS events in PWR's of the Westinghouse design. (Kane affid., pp. 2-3; NUREG-0717, p. 15-13.)

Applicants' affiants R. W. Steitler and O. S. Bradham similarly attested to the performance following an ATWS event in the Summer facility's Westinghouse NSSS, as well as the special operator training to mitigate its consequences. Affiant Steitler presented the results of an analysis of the Westinghouse NSSS response following a bounding or limiting ATWS event for which it was assumed that control rods were never inserted. The analysis was reported to the NRC by Westinghouse, in its report NS-TMA-8182, of December, 1979. Three figures from that report accompanied the Steitler affidavit and presented the time dependency of core heat flux, average coolant temperature, and pressurizer pressure. These variables were found to remain within acceptable limits. From this it was concluded that no unacceptable pressure or temperature values would be reached. Affiant Steitler then discussed why the consequences of an ATWS event in Summer would be less severe. Finally, the Steitler affidavit explained how the Summer facility will meet all NRC requirements for the mitigation of ATWS. (Steitler affid., accompanied by three attached figures.)

Intervenor Bursey's response ignored the requirements of 10 CFR §2.749, and offered only the unsupported and conclusional allegation that ATWS mitigation measures will be inadequate. The Bursey response thus failed to controvert any portion of Staff and Applicants' statements of material facts for which there are no litigable issues. These statements were found to be supported by the appended affidavits. We concluded that Staff and Applicants had met their burdens and were entitled to the relief sought as a matter of law. *Cleveland Electric Illuminating Company, et al.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-443, 6 NRC 741 (1977). Accordingly, we granted the motions of Staff and Applicants with respect to summary disposition of Mr. Bursey's Contention 3.

C. Monitoring of Site Seismicity

Contention 4(b), as amended states that:

The plans for monitoring site seismicity are inadequate in that they do not consider the seismic effect of filling the reservoir. Site seismicity monitoring conducted after the filling of the reservoir should be continued through 1983.

The Staff's motion satisfied the requirements of 10 CFR §2.749 and appended the affidavit of W. F. Kane, who is Staff's project manager for the Summer station operating license application. The affidavit described the seismic monitoring efforts of Applicants and the USGS, and noted the Applicants' commitment to continue such monitoring through 1982. Mr. Kane further stated that Staff will condition an operating license such that Applicants may not discontinue seismic monitoring without written approval from the Staff. Finally, Mr. Kane offered, without support, the Staff's belief that there is no "present justification to impose an absolute requirement that seismic monitoring be continued through 1983." (Kane affid., pp. 1-3.)

In the Board's view, the duration of further monitoring could only be established after reviewing evidence relating to the expected course of further seismicity. We noted that the SER (Stf. Ex. 1 at 2-26) indicated that the largest reservoir-induced earthquakes generally occur up to 10 years after impoundment and that at Lake Jocassee, S.C., another Piedmont reservoir, the maximum event occurred six years after impoundment. Neither of those benchmarks would occur before the end of 1983.

Without more, we were not persuaded by Staff. Accordingly, we denied Staff's motion, and Contention 4(b) remained an issue for litigation. See *Perry*, ALAB-443, *supra*.

D. Health Effects

Contention 10 states that:

The following effects — on a long term basis — have been sufficiently underestimated by the Applicant and the Staff so as to compromise the validity of the favorable Benefit-Cost balance struck at the construction permit phase of this proceeding:

- (a) The somatic and genetic effects of radiation releases, during normal operation, to restricted and unrestricted areas, said releases being within the guidelines and/or requirements of 10 CFR Part 20, and Appendix I to 10 CFR Part 50;
- (b) The health effects of the uranium fuel cycle, given the release values of the existing Table S-3 of 10 CFR Part 51.

Applicants' motion met the requirements of 10 CFR §2.749 and included affidavits of L. D. Hamilton, M.D. and Dr. J. H. Barker, Applicants' staff health physicist. Dr. Hamilton defended the results of the BEIR I, UNSCEAR and BEIR III reports and the Staff's dependence upon these reports in its evaluation of acceptable radiological impacts resulting from normal operation of the Summer facility within the guidelines of NRC regulations. He reviewed the various studies and research results, from which Intervenor's affiants concluded that the risk of health effects had been underestimated at all radiation levels, and pointed out deficiencies and/or inaccuracies that invalidated those conclusions. Dr. Barker attested to the reasonableness of Applicants' and Staff's population dose projections which were used, in conjunction with BEIR risk estimators, to conclude that radiation risks have not been underestimated.

Intervenor's affiant, Dr. K. Z. Morgan, defended his thesis that the dose-response model of the BEIR reports underestimates radiation risks to human health. He also criticized the strong reliance of the BEIR reports upon results of studies of Hiroshima-Nagasaki survivors, and pointed to a recently reported study that questions whether a proper assessment of the relative importance of neutron versus gamma radiation source terms had been used in evaluating the Hiroshima-Nagasaki data. Thirdly, he criticized as excessive the amount of exposure allowed to be received by uranium miners and nuclear power plant workers. (Morgan affid., May, 1981.)

The professional qualifications of the three above-mentioned affiants adequately attested to their expertise and to the weight to be afforded their respective affidavits. Because of the conflicting contents of these affidavits, we were unable to find that either party had met its burden. We concluded, therefore, that evidentiary presentations would be necessary in order to resolve the matter. Accordingly, Applicants' motion for summary disposition of Contention 10 was denied.

III. EMERGENCY PREPAREDNESS

A. Introduction

Intervenor Bursey's contention on emergency preparedness states that "[t]he Applicant has made inadequate preparations for the implementation of [its] emergency plan in those areas where the assistance and cooperation of state and local agencies are required."

Under 10 CFR §50.47(a)(1), no operating license for a nuclear power reactor may be issued unless the NRC finds that the state of on-site and off-site emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. Other portions of the

regulations require licensees and applicants to coordinate their plans with state and local response agencies over whom NRC does not have jurisdiction.

Section 50.47(a)(2) provides that NRC will base its findings as to the adequacy of the off-site emergency plans on a review of the Federal Emergency Management Agency (FEMA) determinations as to whether state and local emergency plans are adequate and capable of being implemented, and that NRC itself will assess the adequacy and capability of implementation of an Applicant's on-site emergency plans. The section also provides that the FEMA finding constitutes a rebuttal presumption on the question of adequacy.

The detailed emergency plans of the Applicants, the State of South Carolina and those of the four counties (Newberry, Richland, Lexington and Fairfield) within which the 10-mile emergency planning zone lies were received in evidence. Appl. Ex. 11-14, 15(a) and (b), 30(a). FEMA's audit of the off-site plans and their implementation during an emergency exercise conducted on May 1, 1981 was also admitted. Stf. Ex. 5. Staff's evaluation of Applicants' plans was presented in Supp. No. 2 to the Summer Safety Evaluation Report. Stf. Ex. 1(b). A joint Staff-FEMA critique of the emergency exercise based on the regulations and NUREG-0654, was received as an attachment to prefiled testimony sponsored by a witness from Staff and a witness from FEMA. Kevern testimony, ff. Tr. 3281, at Attachment C; Richardson testimony, ff. Tr. 3287, at Attachment C.

Staff's critique of Applicants' on-site plan concluded that, subject to Applicants' meeting certain commitments regarding deficiencies in the plan, the plan "will provide an adequate training basis for an acceptable state of emergency preparedness and will meet the requirements of 10 CFR Part 50 and Appendix E thereto." Stf. Ex. 1(b), Appendix A, at A-13. Staff's subsequent critique of the May 1, 1980 emergency exercise concluded ". . . that the state of emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency." Kevern testimony, ff. Tr. 3281, Attachment C, at para. 22. Correction of the deficiencies noted will be verified through subsequent routine NRC inspection. *Id.* at para. 20.

Similarly, FEMA's critique of the emergency exercise concluded, as follows (Richardson testimony, ff. Tr. 3287, Attachment C, at para. 19):

While improvements are needed, and specific lessons were learned, South Carolina and the affected local counties are capable of executing site-specific REP plans for the V. C. Summer Nuclear Station.

Intervenor Bursey focused on the following specific emergency planning topics: shape of the emergency planning zone; decontamination and medical services; public alerting; transportation; public education; Applicants' emergency information brochure; public notification; greater-than-design-basis accidents; and crop and livestock contamination. The Board's findings cover these topics.

B. Findings of Fact

Shape of the Emergency Planning Zone

1. The Kelly Miller school, an elementary school, is located a few hundred yards outside of a 10-mile radius from the Summer Nuclear Plant. The Greenbriar Headstart school is a short distance down the road from the Kelly Miller school. Neither school was included in the 10-mile EPZ (emergency planning zone). Tr. 2174-76.

2. The Fairfield County Council recognized the importance of evacuating the schools in the event of a radiological emergency at the Summer plant and has voluntarily included them in its emergency evacuation plans for the C-2 sector. The decision to include the schools was a "common sense decision" that a heavily populated community such as a school lying near the fringe of the EPZ should be evacuated if the plume were going in that direction. Tr. 2174-79, 2194-98.

3. The official charged with the emergency planning responsibilities for Fairfield County was unable to assure the Board that the inclusion of the two schools in the plan on a voluntary basis would not be subject to reversal by the County Council at some future time. *Ibid.*

4. In other instances, the EPZ did not follow a strict 10-mile radius but, pursuant to 10 CFR §50.47(c)(2), was adjusted to take into account demography, topography, land characteristics, access routes, and jurisdictional boundaries. Tr. 2173-74, 2177.

5. The area of Lexington County within the 10-mile EPZ is relatively small. It has a population of approximately 712 inhabitants. They are located generally in what is known locally as the Chapin area. Tr. 2121.

6. Included within the EPZ in Lexington County is the town of Chapin and Chapin High School, which has approximately 670 students. Tr. 2122.

7. The Chapin Elementary School has between 900-1,000 students and is located approximately one mile from the Chapin High School. It is not included in the EPZ and is presently not included in any plans for evacuation in the event of a radiological emergency at the Summer plant. The possibility of including the Chapin Elementary School in emergency plans in the future is being considered. Tr. 2122-24.

8. When Chapin Elementary School is in session, there are no school buses parked on its premises. Apparently, students are transported by the same buses used for the Chapin High School, which are parked at Chapin High School during the day. The emergency plans contemplate using these buses to evacuate Chapin High School in a radiological emergency. In the event that it becomes necessary to evacuate children near the Chapin Elementary School, the authorities would have to supplement the school bus transportation with other buses that would have to be made available by South Carolina Electric and Gas Company. Tr. 2125-28.

9. In the event of a radiological emergency that would require the evacuation of Chapin High School, the only reason for not evacuating the Chapin Elementary School is that it was not included in the EPZ. *Ibid.*

10. The Board finds that the emergency plans for the Summer nuclear site are deficient in their failure to include the Kelly Miller, Greenbriar Headstart, and Chapin Elementary schools in the EPZ. The failure to include those schools is contrary to the requirements of 10 CFR §50.47(c)(2) and does not realistically take into account the exigencies of a radiological emergency. The Board finds further, pursuant to 10 CFR §50.47(c)(1), that the deficiencies in the plan are not significant (especially in light of the voluntary inclusion of the Kelly Miller and Greenbriar schools in the evacuation plan) so as to require a withholding of the operating license. The Board directs that the EPZ be expanded to include the three schools and that the emergency evacuation plans be adjusted accordingly within the first year of the plant's operation.

Decontamination and Medical Services

11. In the event of a radiological emergency, Richland, Fairfield and Newberry county personnel will determine the need to decontaminate persons coming into their evacuation centers. However, Newberry County, presently lacking the manpower to decontaminate individuals, will refer contaminated persons to the State Emergency Preparedness Agency. Tr. 2009-12, 2074-76, 2182. Lexington County lacks sophisticated detection equipment and hence will rely upon State facilities. However, the majority of its ambulance drivers, advanced medical technicians with radiological monitoring training, can recognize the more obvious cases of contamination. Tr. 2132-3, 2145-48.

12. The following number of decontamination showers are available: Lexington County, 72 showers; Richland County, 69 showers; Newberry County, 40 showers; and Fairfield County, 25 showers. Tr. 4446. Additional portable facilities are available at the Fort Jackson complex. Tr. 4446-47.

13. Hospital facilities within the Richland County area can treat the following numbers of radiological patients: Providence Hospital — 14 patients, Richland Memorial Hospital — 24 patients, and Moncrief Army Hospital at Fort Jackson — 25 patients. Newberry County has facilities for an unspecified number, but at least one. There are up to 28 additional hospitals in the state which could each receive one or more contaminated or injured individuals in case of a radiological emergency, and mobile hospital units containing approximately 400 cots. Finally, if the need arose, the neighboring states of North Carolina, Georgia and Tennessee, each of which has nuclear power facilities of its own, could be called upon to provide backup hospital facilities. Tr. 4440-47.

14. Considering the small number of people residing within the 10-mile EPZ, the Board finds decontamination and medical treatment facilities are available in the event of a radiological emergency.

Public Alerting

15. A siren acoustical alerting system is being installed to meet the requirements of NUREG-0654. A backup method of alerting will be available through the use of emergency vehicle sirens and emergency personnel going from door to door. Applicant testimony, ff. Tr. 3002, at 23; Tr. 6059-60.

16. The Sheriff of Richland County stated that, while his organization on its own could sound vehicular sirens in one to two hours, he felt that proper evacuation notification, on a door-to-door basis, would require six to ten hours, if performed by his agency without assistance. The Sheriff's testimony assumed that his organization would have to alert (by siren) as well as instruct (by door-to-door notification) all county residents within that county's portion of the ten-mile EPZ. Tr. 6024-51. Other agencies are also available to assist with the backup method of siren alerting. Applicant testimony, ff. Tr. 6061, at 2-3; Tr. 6059-60.

17. The vulnerability of the siren alerting system to power failure was questioned. An alternate system exists that features thirty minutes of battery-powered operation in the event of power failure. The equipment-only cost differential for such a system would be an additional \$200,000. Tr. 6057-58, 6123. The siren alert system being installed receives power from four different utilities (including SCE&G) via numerous circuits with outage averages of not more than 3.1 per year. Spinning reserves, interties and two-way feeds to substations minimize the threat to the siren system from outages. Loss of power from the Summer facility would not adversely affect the distribution circuits that supply power to the sirens. Appl. testimony, ff. Tr. 6097.

18. Based upon the foregoing and on the assumption that the siren alerting system being installed performs satisfactorily, the Board finds that the method of alerting the public within the ten-mile EPZ is adequate, and that the vulnerability of this system to power failures is acceptably small. Because the purpose of the siren system is to alert residents to turn on their radios for broadcasts of emergency instructions, the Board finds that door-to-door evacuation notification is unnecessary. *See* NUREG-0654 at 3-2.

Transportation

19. In late 1980, Applicants contracted with a Columbia, S.C. based firm to perform an evacuation time study for the ten-mile EPZ, using the guidelines set forth in Appendix IV of NUREG-0654. Appl. testimony, ff. Tr. 3002 at 12-13.

The report describing the study and its results (Appl. Ex. 30(b)) stated that for people with cars about 81 minutes would be required to get the last car out of the plume EPZ in favorable weather conditions. Tr. 3160-64.

20. The report postulated the use of buses from each county involved to transport those people that are without cars, including students. Tr. 3171-72. Although it had been ascertained that there is an adequate number of school buses available for this purpose, the study report did not explicitly address where the buses might be when needed, nor how they would be deployed, other than to have the buses driven by their regular student drivers. These drivers take the buses to their homes after school use is over. Tr. 3166-69.

21. Newberry, Lexington and Fairfield counties consider that the use of student drivers for bus transportation of evacuees is a cause for concern and could require alternative arrangements. Tr. 2021, 2154, 2180-81. In some instances, a school is located outside of the ten-mile EPZ but some of the students of that school reside within the EPZ. Partial evacuation of such schools will be undertaken: those students residing within the EPZ will be taken directly to processing or relocation centers. Tr. 3175-80.

22. Fifty-nine power company (SCE&G) buses are available to assist with evacuation. A signed agreement with SCE&G and Richland County committed the utility to provide transportation, food and shelter to evacuees. Lexington County also will request the use of SCE&G buses, if needed. Fairfield County has additional vehicles from other county services available to assist with evacuation. Tr. 2062-63, 2128.

23. The maximum ten-mile EPZ bus evacuation time under adverse weather conditions is 199 minutes. Appl. Ex. 30(b) at 42; Tr. 3197. Intervenor noted that a five-mile per hour wind could carry a radioactive plume a distance of ten miles in two hours. Tr. 3198-99. The study report overlooked the fact that school bus travel speed is limited by state law and mechanical governors to 35 miles per hour (Tr. 3203), and used a speed of 45 miles per hour. Appl. Ex. 30(b) at 30. Adverse weather, for the purpose of evacuation time analyses, was taken to be icy roads which reduced travel speed to 75% of normal. *Id.* at 40.

24. The Board finds that there exists an adequate supply of vehicles — primarily school buses — to accommodate school students and residents needing transportation for evacuation purposes. However, the evacuation time study seems to have assumed an optimum utilization or deployment of buses without regard to whether organized plans for their deployment exist. The study assumed an unrealistic speed of travel for the school buses. It used a 25% speed reduction to compensate for icy road conditions and provided no basis for believing this to be a realistic reduction. The fact that schools are in session for perhaps a considerably fewer number of hours per year than the plant may operate, coupled with concerns about use of student drivers, emphasizes the need for a well organized plan of bus and driver deployment that was not described in the record. Finally, bus evacuation of certain

sectors during adverse weather was shown by the study to require more time than would be required by a radioactive plume to overtake the evacuees, assuming a five-mile per hour wind blowing along that sector. We find that these defects in transportation planning deserve further attention during the first year of operation of the Summer facility.

Public Education; Applicants' Emergency Information Brochure; Public Notification¹

25. The Intervenor and his witness on emergency preparedness expressed concerns about whether the local population's knowledge about nuclear plant accidents is sufficient for residents to respond properly and without panic to an emergency. Tr. 2138, 3912.

26. The Staff's opinion is that educational emphasis must be placed upon how to implement emergency plans and follow instructions regarding what to do in an emergency rather than upon radiation effects or plant accident parameters. Bus drivers, for example, should be following instructions rather than analyzing the progression of an accident in order to make independent judgments as to what each driver should do. Tr. 4250-52. County officials took a similar position. Tr. 2016-17, 2135-38, 2162-63.

27. Applicants are cooperating with Richland County civil defense officials on the preparation of educational information for public dissemination. Tr. 2067-69. Historical accounts of public behavior following serious accidents indicate orderly response to emergency measures on the part of the public and medical personnel. Tr. 4237-43, 4592.

28. Applicants' emergency information brochure (Int. Ex. 4) is one of the means of educating the public about the plant and how to respond to an emergency. Tr. 3003-36. It was alleged to have understated the possible effects of radiation on people, overstated (during normal operation) the cleanliness of the secondary loop of the facility, provided insufficient information about how the public will be notified and evacuated if necessary, and generally played down the potential seriousness of an accident. Tr. 3003-36. There is room for improvement to the brochure, and several areas of improvement were identified for a future revision. Applicants will sample the knowledgeability of the general public within the ten-mile EPZ and use this information as guidance for future brochure changes. Appl. Panel testimony, ff. Tr. 3001. None of the criticisms negated the brochure's fulfillment of the requirements of NUREG-0654 and 10 CFR §50.47. Tr. 3036-72.

¹ We distinguish, in this discussion, between public *alerting* (i.e., the siren alerting system discussed elsewhere) and public *notification*, the latter consisting of making the public aware of what has occurred and instructing them on what protective action should be taken.

29. Each of the four counties which encompass the ten-mile EPZ has communication equipment to activate the emergency plans, including the radio broadcast of emergency messages that will instruct the public on what to do. Tr. 2014, 2055-56, 2130, 2161-62. The Governor's office is assisting with radio broadcast efforts aimed at public awareness and notification. Tr. 1941-46. Applicants' emergency information brochure (Int. Ex. 4) identifies the radio stations that will carry instructions to the public. In addition to radio messages to the public, an educational television channel is equipped to broadcast live and taped instructional messages. Tr. 1857-59, 2067. The State's Department of Wildlife and Marine Resources has the ability to contact people in remote areas and to conduct search and rescue operations in support of the emergency plan. Tr. 1871-73.

30. We find that additional public education regarding the characteristics and consequences of nuclear accidents is not necessary for the emergency preparedness plan to function effectively; nor is the Applicants' emergency information brochure sufficiently flawed to impair its usefulness. Communication equipment and plans for its use in instructing the public at risk appear to be adequate.

Greater-Than-Design-Basis Accident

31. Intervenor submitted prefiled testimony on the inadequacy of emergency preparedness plans to cope with a greater-than-design-basis accident. Tr. 3899-3914. The Board admitted only that portion of this testimony that postulated a hypothetical Class 9 accident (initiated by a large break LOCA followed by an ECCS failure) and post-accident emergency responses, for which it was alleged that emergency plans are inadequate. Tr. 3893-94. The NRC-FEMA emergency preparedness standards were not contested but rather the ability to implement them. Tr. 4036. It was alleged that State and local personnel responsible for implementing the plans and the population at risk in the plume EPZ were poorly educated regarding the nature of reactor accidents and their radiological consequences. Thus, widespread panic would develop and cause a serious breakdown of emergency response efforts. Tr. 3912.

32. Intervenor's witness asserted that despite the experience at TMI-2, malfunctions have subsequently occurred at numerous other facilities (Tr. 3909), and that cascading of trivial accident events can ultimately lead to an accident so serious as to defy analysis. Tr. 3923-27. Nonetheless, the witness' postulated accident initiating event is a PWR-3 (consistent with Table 6-2 of Staff Ex. 3); it does not represent the most serious accident that has been considered for accident analysis purposes. *Id.* at 6-8 to 6-9; Tr. 3928-30.

33. Applicants testified that Intervenor's postulated post-accident response sequence is unrealistic and unreasonable and that it ignores numerous identified improvements, including TMI lessons learned, that would militate against the credibility of such a postulated sequence. Tr. 4174-76, 4811-97. According to

Applicants it is not valid to assume, as did Intervenor's witness, that evacuation would not be initiated considerably in advance of a major release of radioactivity because of the many post-TMI improvements that have significantly improved the ability of control room personnel to recognize quickly the type and potential seriousness of a malfunction that has occurred. Tr. 4111-4407 (passim), 4245-47. Applicants further testified that the initiating event (large break LOCA and subsequent ECCS failure) of the postulated response sequence is one easily identified by a control room operator, enabling a relatively rapid recognition of the onset of a general emergency. Tr. 4522, 4554-55.

34. A post-accident emergency response sequence (Appl. Ex. 39) representing Applicants' version of how the response to a Summer Station general emergency would proceed was reviewed. Tr. 4419-26, 4505-07. That sequence is as follows: (a) 12:06-12:20 p.m. — the determination that a general emergency exists is made; (b) 12:11-12:35 p.m. — local, state and federal agencies are notified and evacuation of 2-mile radius and 5-mile downwind sector is recommended; (c) 12:16-12:50 p.m. — the public alerting system (siren) and emergency broadcast system are activated; (d) 12:20-1:10 p.m. — evacuation of 2-mile radius and 5-mile downwind sector is initiated; (e) 1:00-1:15 p.m. — evacuation of 5-mile radius and 10-mile downwind sector is recommended; (f) 1:36-3:18 p.m. — evacuation of 2-mile radius is completed; (g) 1:40-4:27 p.m. — evacuation of 5-mile downwind sector is completed; (h) 2:29-4:26 p.m. — evacuation of 5-mile radius (those individuals with transportation) is completed; and (i) 2:25-4:13 p.m. — evacuation of 10-mile downwind sector (those individuals without transportation) is completed.²

35. By comparison, the post-accident response sequence postulated by Intervenor does not reach the general emergency declaration until 3:00 p.m. — based upon the TMI-2 event (Tr. 4014) — nor initiate off-site evacuation warnings until 5:00 p.m. Tr. 3911-12.

36. Planning regulations and the role of NUREG-0654 were reviewed by Staff. Significant improvements in emergency planning as the result of TMI have been made; the requirement for periodic exercises of all plans and the continuing improvements to these plans arising out of deficiencies has been imposed. Tr. 4571-81. Staff's version of the response activity sequence, subsequent to Intervenor's postulated initiating events (ff. Tr. 4603) was analogous to, and in general agreement with, Applicants' version. Tr. 4605-08; 4633-37.

37. The Board finds that, while the initiating events postulated by Intervenor reflect a credible possibility, the postulated post-accident sequence of response activities is not consistent with the level and depth of planning, the results of the

² Evacuation times were based upon a study of population distribution versus evacuation time, contracted for by Applicants. Appl. Ex. 30(b).

Summer exercise of these plans, and current state of knowledge about response to, and control of, accidents. Intervenor's proposed accident scenario has not pointed up any inadequacies in the post-accident response plan.

Crop and Livestock Contamination

38. Part II of NUREG-0654 at paragraph J.9 provides that:

Each State and local organization shall establish a capability for implementing protective measures based upon protective action guides and other criteria. This shall be consistent with the recommendations of EPA regarding exposure resulting from passage of radioactive airborne plumes, (EPA-520/1-75-001) and with those of DHEW (DHHS)/FDA regarding radioactive contamination of human food and animal feeds as published in the *Federal Register* of December 15, 1978 (43 FR 58790).

Appendix I to the South Carolina Technical Radiological Emergency Response Plan (Applicants' Exhibit 15(b)) contains protective action guides for milk and food. These list contamination levels for various radioactive isotopes as protective action indicators. The Plan requires, among other things, that the Bureau of Radiological Health of the Department of Environmental Control analyze food-stuffs produced in the ingestion zone EPZ and recommend interdiction of items exceeding the stated limits. The Plan further provides that the Bureau of Radiological Health will recommend sheltering of dairy animals in the event of a release of iodine, cesium or strontium; fodder will be analyzed to determine the need to provide stored feed for these animals. *Id. See.* J-4.

39. In addition, Appendix II of the State Technical Radiological Emergency Response Plan contains a description of offsite radiological monitoring equipment and programs. These include, among other things, monitoring of particulate and gaseous air samples, surface water samples, ground water samples, potable water samples, raw milk samples, soil and/or bottom silt samples, fish and/or shellfish samples, and vegetation samples.

40. The Agricultural Extension Service of Clemson University has support responsibilities that include: advising as to the location of possible acreages of edible crops, berries, and fruits in the contamination area; advising as to the location and size of dairies in the contaminated area; advising as to the location and number of livestock and poultry in the contaminated area; advising as to on-farm storage of grain and edible agricultural products in the contaminated area; advising as to available shelter for livestock in the contaminated area; advising as to wholesale distribution sources for agricultural products in the contaminated area; advising as to availability of stored grain and other feed and silage for animals in the contaminated area; furnishing information and inspectors for assessing damage to farms; providing guidance and assistance to agencies who are responsible for evacuation and care of livestock; identifying, establishing and coordinating

evacuation reception areas for livestock and effecting return of such animals to the owners; assisting in the decontamination or disposal of livestock, feed, milk and other contaminated farm products; assisting in the control of livestock and agricultural products exposed to radiation or contamination; providing informational and educational material to farmers, ranchers, and others on protective measures for themselves and their property against hazards associated with disasters; and finally, providing advice on clean-up of damage to property, sanitation precautions, insect controls, food preparation in disasters, recovery actions for damaged farms and renovation of damaged equipment or property. Tr. 1803-04.

41. A list of dairy producers, agricultural producers and agricultural water resources in the four-county area nearest to the nuclear plant has been assembled. Tr. 1807. However, the role of the Extension Service is educational and advisory only and the Service has no organized plan for instructing farmers about what to do in an emergency. Tr. 1814, 1818.

42. A farmer who resides approximately 10 miles from the plant was not aware of how his crops, livestock and milk should be handled in the event of a radiological emergency. Tr. 1821-26; Coleman affid., ff. Tr. 1828.

43. Richland County officials recognize the need of dairy farmers to return to evacuated areas to care for livestock. Tr. 2060.

44. We find that existing educational and surveillance resources along with protective action guides are adequate for coping with the diagnostic needs of the agricultural communities potentially at risk. However, the record is unclear about the existence of organized plans to implement remedial and preventive measures for consumer protection against food pathway contamination. If organized plans for such measures exist, the record indicates that they were not well communicated to the agricultural community. If the plans do not exist, they should be formulated. The Board will require as a license condition that plans to implement remedial and preventive measures for consumer protection against food pathway contamination be formulated and communicated to the agricultural community during the first year of reactor operation.

Intervenor's Proposed Requirements

45. In his proposed findings on the emergency preparedness contention, Intervenor recommended the imposition of six specific requirements upon the Applicants. These recommendations exceed the scope of Contention 8 and the Commission's emergency planning requirements and lack any evidentiary justification. The six recommendations, and Licensing Board's findings thereon, are as follows:

46. First, the Intervenor recommended that a clearer chain of management responsibility be established to cope with a serious accident. The Commission's

regulations require, in part, that: primary responsibilities for emergency response by the nuclear facility licensee are assigned; on-site facility licensee responsibilities for emergency response are unambiguously defined; adequate staffing to provide initial facility accident response in key functional areas is maintained at all times; and the interface among various onsite response and offsite support and response activities are specified. 10 CFR §50.47(b). The evidence of record indicates that these standards have been met in the Applicants' emergency plan. Stf. Ex. 1b, Appendix A §2(A), (B); Appl. testimony, ff. Tr. 3001, at 9, 27.

47. Second, the Intervenor recommended that the Applicants undertake a "serious education effort" for state, local and hospital officials to acquaint them with unspecified post-TMI reactor considerations. The Commission's regulations require the provision of radiological emergency response training to those who may be called upon to assist in an emergency and require that periodic drills be conducted to develop and maintain key skills. 10 CFR §50.47(b). The evidence demonstrates that the Applicants have satisfied these requirements. Stf. Ex. 1b, Appendix A, §2(N), (O); Staff Exhibits, ff. Tr. 3281, Attachment D at 3, 16-18; Staff testimony, ff. Tr. 3287, Attachment C at 3-5, 12-13; Appl. testimony, ff. Tr. 3001, at 4-7, 9-10, 24-25, 27-28, 33-35.

48. The Intervenor's third recommendation is that the Applicants undertake a door-to-door public notification and education campaign. This recommendation goes beyond the scope of Contention 8. In any event, the Commission's regulations require that information be made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency. 10 CFR §50.47(b)(7). The evidence indicates that this requirement has been satisfactorily met. Stf. Ex. 1b, Appendix A, §2(g); Staff testimony, ff. Tr. 3281, at 5, 13-15; Staff testimony, ff. Tr. 3287, at 6; Appl. testimony, ff. Tr. 3002, at 11-12.

49. The fourth and fifth recommendations are that backup battery power be provided for the siren system and that radioactivated "black boxes" be installed in the homes of those residing in the EPZ. These recommendations are beyond the scope of Contention 8 and the applicable Commission regulations. The Commission's regulations require establishing means to provide early notification to the populace within the plume exposure pathway EPZ. 10 CFR §50.47(b)(5). The evidence shows that this requirement is being satisfied through the installation of an acoustic alerting system (sirens). If the siren system is inoperative or unusable, alternative means of notification exist, including a sheriff department airplane equipped with loud speakers, enforcement vehicles with sirens, and volunteer fire department and community organizations' cooperation. Stf. Ex. 1b, Appendix A, §2(E); Stf. testimony, ff. Tr. 3281, at 11; Appl. testimony, ff. Tr. 3002, at 22-23; Tr. 2066-67.

50. Recommendation six addresses the education of farmers within the EPZ relative to emergency response measures. This segment of the population is

already the object of a specific educational program being conducted through the Clemson University Agricultural Extension Program. This program includes advice on what to do with agricultural products and livestock in the event of a radiological emergency. Tr. 1802-05.

51. Based upon the entire evidentiary record of this proceeding, and upon the foregoing Findings of Fact, the Board finds that, subject to the conditions imposed by the Board, the Applicants have made adequate preparations to implement their emergency plan. The six recommendations of Intervenor's proposed findings are rejected.

IV. QUALITY ASSURANCE-QUALITY CONTROL

A. Introduction

Quality control (QC) was contested by Intervenor's Contention 9, which stated:

The quality control of the Summer plant is substantially below NRC standards as evidenced by consistently substandard workmanship, in several aspects, during the construction of the plant.

Intervenor based his case upon his Exhibits 1, 2 and 3 (involving an NRC inspection report and worker allegations of poor construction practices) and his examination of witnesses for Applicants and Staff. Applicants' case was based upon the testimony of a panel of several witnesses, and Exhibits 5, 6, 7, 8, 9(a-c) and 10(a-c). The thrust of Applicants' case was twofold: the organizational and functional characteristics of Applicants and their contractors enabled them to meet the requirements of the NRC in areas of QC and quality assurance (QA); and its responses and corrective actions taken to improve and/or eliminate all unsafe and/or undesirable conditions known or alleged to have occurred during construction. The Staff also presented a panel of witnesses and Exhibits 1, 1(a) and 1(b). The Staff's case was comprised of its appraisal of Applicants' quality programs and their implementation, a review of the efforts and findings of the Division of Inspection and Enforcement (I&E), and a review of the Applicants' resolution of unsatisfactory situations.

B. Findings of Fact

52. Management for the lead Applicant (SCE&G) recognized as early as 1971 (and before the filing of the construction permit application) the (then) AEC's serious emphasis on the great importance of QA and QC. Functional and organizational measures were adopted to assure that employees at all levels were indoctrinated concerning the importance of an effective QA/QC program and

management's dedication to the implementation of that program. The program was organized to remove it from the pressures of construction schedules and cost concerns. A continuing program of employee training and retraining was established and maintained. Additionally, a management audit function was set up to continually review the effectiveness of the quality program to detect trends and root causes indicative of the need for program changes, and to evaluate training effectiveness. Because at one time it lost confidence in the effectiveness of its constructor's QC program, SCE&G initiated its own parallel inspection program and demanded more effective performance by its constructor. To minimize problems that might impair construction quality on safety-related structures, SCE&G took the added precaution of imposing safety-related specifications to nonsafety related materials and construction activities. Appl. testimony, ff. Tr. 1388 and ff. Tr. 2672; Tr. 2652-55.

53. Applicants detailed how their QA and QC efforts are organized, how QA/QC functions, and why QA/QC has been effective in achieving management's objectives. The following points were highlighted:

- Use of design specifications in excess of requirements in order to provide additional safety margins;
- Repetitive training (for skills) and indoctrination (for attitude) of craftsmen (especially welders) to increase the likelihood that work will be performed properly;
- Detailed documentation of all off-normal situations, and follow-up through final resolution;
- Close liaison with vendors at their shops and with contractors at the plant site;
- Direct access by workers to utility management, with provisions for anonymity if the worker desires;
- Detailed follow-up of all allegations of off-normal quality;
- Stop work authority vested in three levels (including on-site) of the QA/QC organization.

Applicants investigated numerous allegations of three on-site craftsmen employed by Applicants' constructor. These allegations were set out in Intervenor's Exhibits 1, 2 and 3, and formed the bases of his Contention 9. Careful investigations were undertaken to determine whether each allegation was supported by facts; which ones, if supported, had safety significance; and which ones were followed by corrective actions. Where corrective actions would entail extraordinary difficulty, worst-case assumptions were made about the condition of the affected structure or hardware, and analyses were made to determine whether unacceptable safety implications were involved, including any code violations. None of the allegations identified problems which would have been difficult to remedy because of construction progress. In fact, these allegations identified only a minimal number of safety related concerns, all of which have been or are in the process of being

resolved to Applicants' and NRC's satisfaction. Illustrative of the extent to which these allegations were systematically investigated and identified problems corrected was the allegation that socket welds with undersized weld fillets were approved. Although nearly 14,000 socket welds had been performed, a 100% reinspection program was undertaken followed by reworking and reinspection of all welds (whether or not safety related) if fillet size was questionable. At the time the testimony was presented, less than 100 socket welds designated for rework remained to be completed. All rework and reinspection to that time had been accepted by the NRC. A few socket welds imbedded in concrete were stress analyzed to show that, if they passed hydrostatic testing, they were acceptable because of the reinforcing and restraining action of the concrete. Applicants' architect/engineer found that conservatism in specifying pipe sizes was such that, even if undersized fillets had gone undetected, they would probably not be a source of safety concern. Whereas the raw numbers of nonconformance items showed that the Summer project was about on par with other utility nuclear projects (a fact that Applicants were not proud of), Applicants expressed great confidence that they will have a high quality facility because of their thoroughness in detecting and correcting off-normal situations, and the accompanying improvement in training and surveillance. Applicants further noted that they had received no violation notices from NRC. Appl. testimony, ff. Tr. 1388; Tr. 1390-1491, 2660-94; Appl. supplemental testimony, ff. Tr. 2672.

54. A Staff panel of personnel from the Office of Inspection and Enforcement (I&E), testified that I&E had verified that Applicants' construction QA/QC program met NRC objectives. This verification was achieved through I&E's ". . . examination of management controls, including quality assurance and quality control manuals, work procedures, records and documents and by the observation of work in progress. Work in progress was inspected for quality workmanship, conformance to control procedures and conformance to codes. Records were examined to verify that purchased materials and equipment met quality standards and that quality control inspections were performed throughout construction." These inspections entailed 501 man days of effort by experienced inspectors over the time period from May, 1971 through March, 1981, during which time there were no violations, twenty-two infractions, eleven deficiencies, and two deviations. Both the Applicants and NRC analyzed the safety significance of these items; and SCE&G instituted measures to preclude recurrence. Proper and acceptable corrective measures were confirmed through I&E inspections. I&E undertook a detailed follow-up of worker allegations and, where nonconformances could be identified, reviewed the corrective measures taken. These measures were judged to be satisfactory. Stf. testimony, ff. Tr. 2814.

55. Cross-examination of the initial I&E witnesses indicated that they lacked direct knowledge of I&E's follow-up of certain discrepant construction activities

identified by workers. Staff produced additional witnesses to cover the items in question. Tr. 2815-41. Their principal points were:

- I&E has not closed out its follow-up on all discrepant items at the plant and will not permit full-power operation until all remaining open items have been resolved;
- There have been fewer noncompliances at Summer than generally found at other facilities within Region II;
- Subjectively, I&E judges the quality of construction at Summer to be slightly above average as compared with other facilities in Region II;
- I&E, based upon the assumption that all currently open discrepant items will be satisfactorily resolved, has no concern about the safety of the plant and recommends the granting of an operating license. Tr. 3499-3572.

56. The Board notes that the examination of the I&E panel concerning the allegations of improper construction practices did not in all cases yield unequivocal responses. For example, the significance of nonconforming socket welds in safety-related piping seemed to have been deemphasized because of large mechanical safety factors inherent in their as-built configurations and the observation that historically no socket weld discrepancies have ever been found to be the cause of pipe failures. (It would appear that if weld requirements are overly conservative, they should be relaxed rather than downgraded in significance.) The allegation of on-site use of drugs and alcohol was investigated and confirmed by I&E. It was found not to be widespread, nor to have significantly affected safety-related work, nor to be unusual in large construction efforts. Tr. 3529-30. (The evidence is not clear whether NRC policy is that such practice is not to be tolerated, or that it is to be tolerated in moderation so long as safety is not compromised.)

57. Despite such examples of soft testimony, however, we find from the evidence adduced that there is reasonable assurance there will be no uncorrected safety-related inadequacies in the as-built Summer facility, and that the quality control of the construction of the Summer plant is acceptable.

V. HEALTH EFFECTS (Contention 10)

The following effects — on a long-term basis — have been sufficiently underestimated by the Applicant and the Staff as to compromise the validity of the favorable Benefit-Cost balance struck at the construction permit phase of this proceeding:

- (a) The somatic and genetic effects of radiation releases, during normal operation, to restricted and unrestricted areas, said releases being within the guidelines and/or requirements of 10 CFR Part 20 and Appendix I to 10 CFR Part 50;

- (b) The health effects of the uranium fuel cycle, given the release values of the existing Table S-3 of 10 CFR Part 51.

A. Introduction

Applicants' Motion for Summary Disposition

The Applicants moved for summary disposition of this contention on May 7, 1981. On May 27, 1981, the NRC Staff filed a response in support of the action, based on the FES (Virgil C. Summer Final Environmental Statement, dated May 1981, Stf. Ex. 3) and an accompanying affidavit. Intervenor Bursey filed an opposition to this motion on May 28, 1981. The Applicants' supporting affidavit relied heavily on health effects information contained in the BEIR (Biological Effects of Ionizing Radiation) Committee reports. Dr. Morgan, the Intervenor's witness, contended that the BEIR results were unreliable because they relied heavily upon studies of radiation exposure from Hiroshima and Nagasaki which (1) were biased because of the population sampled, and (2) underestimated the gamma radiation dose to the population.

In our Order of June 19, 1981, we denied the motion for summary disposition because we recognized an unresolved issue in the validity of the data used in the evaluation of health effects.

Nature of the Evidence

The Intervenor's direct case on the contention was the testimony of Dr. Karl Z. Morgan.³ Testimony ff. Tr. 1545. Dr. Leonard D. Hamilton testified on behalf of the Applicants. Testimony ff. Tr. 2380. Staff's direct case consisted of pertinent portions of the FES (Stf. Ex. 3) which was received into evidence by stipulation of the parties (Tr. 2385), and the testimony of Dr. Edward F. Branagan who had prepared Sections 4.5 and 4.7.5 of the FES. Dr. Branagan also submitted written rebuttal testimony (ff. Tr. 2406) and testified at the July 17 hearing session (Tr. 3822-37) to clarify earlier testimony. Applicants' case consisted of the prefiled (ff. Tr. 2380) and oral (Tr. 2321-2484) testimony of witness Hamilton, and the oral (Tr. 3847-3862) and prefiled (ff. Tr. 3846) testimony of witness Barker.

³ The Intervenor submitted prefiled testimony of two other witnesses, Drs. Helen Caldicott and Michio Kaku. The Board excluded Dr. Kaku's testimony as repetitious of Dr. Morgan's testimony. Tr. 1690-91. Dr. Caldicott never appeared to testify.

Overall Position of Parties

The Intervenor's position is that the Applicants and Staff have chosen risk values that would depreciate the risk rather than exaggerate the risk, and that Dr. Morgan's projection of 39 fatal cancers, 70 cancers and 1700 genetic disorders during the life span of the plant was unrefuted. Int. Prop. Finds. at 4.

The Staff's position is that where individual doses associated with exposures are controlled according to the limits of 10 CFR Part 20 for the exposure of workers and the general public, the risk to individuals will be extremely small. Stf. Ex. 3 at 4.5.5. The risks to the general population will be similarly small because no health effects, somatic or carcinogenic, have been detected at the doses estimated in the FES. See *Id.* at 4-28; Stf. Prop. Finds. 50.

The Applicants argue that Dr. Morgan's latest estimates of risks were outside the accepted range and those endorsed by the Commission in *Public Service of Oklahoma* (Black Fox Station, Units 1 and 2), CLI-80-31, 12 NRC 264 (1980) even though his earlier published health effects estimates were within the range of those given by the Staff in the FES. Applicants further argue that (1) Dr. Morgan had no recommendation against operation of the plant based upon estimated health effects, and (2) since Dr. Morgan did not clarify the record on his estimates of genetic effects, the Staff's testimony stands and there is no real controversy on estimates of genetic effects. Thus Applicants argue that given the uncertainties involved, there is no material disagreement between Staff and Applicants' witnesses, and Dr. Morgan. Appl. Prop. Finds. 226.

B. Findings of Fact

Risk Estimators

58. The health effects from the low-level ionizing radiation that would result from normal operation of the Summer facility were estimated by the Staff in the FES by multiplying the dose commitment (in units of person-rem) by an appropriate risk estimator. Branagan Rebuttal Testimony, ff. Tr. 2407, at 1-3. The risk estimators used in the FES are based on the linear dose response and the absolute risk projection model described in the BEIR I Report. *Id.* at 2-3; Tr. 2394. For a somatic risk estimator, the Staff used 140 potential cancer fatalities per million person-rem (140/10⁶ person-rem) and for all forms of genetic disorders used 260 potential cases per million person rem (260/10⁶ person-rem). Tr. 2459-60; Stf. Ex. 3 at 4.5.5.

59. These risk estimators are comparable to, and consistent with, values recommended by the 1980 BEIR Committee Report (BEIR III), BEIR I, the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), the National Council of Radiation Protection and Measurements

(NCRP), and the International Commission on Radiological Protection (ICRP). These organizations represent the views of the overwhelming majority of the scientific community. Tr. 2395.

60. The FES contains a second set of somatic cancer death risk estimators based on a relative risk model and the assumption that risk prevails for the duration of life. These values are about four times higher (approximately 500 potential cancer mortalities per million person-rem) than the above estimates. The range for the cancer risk estimator could also include zero. Stf. Ex. 3 at 4-25; Tr. 2394.

61. The genetic risk estimator used by the Staff has a range of uncertainty of a factor of about 6 above and a factor of 4 below the 260 potential case value. This would give a range of 60 to 1500 cases per million person-rem. Stf. Ex. 3 at 4-25.

62. Applicants' witness Dr. Hamilton concurred with the risk estimators used in the FES. Tr. 2332, 2334. He based his risk estimates on BEIR I and BEIR III, and on UNSCEAR reports. Tr. 2326.

63. Intervenor's witness, Dr. Morgan used 900 potential cancer fatalities per million person-rem as the risk estimator for somatic health effects. He acknowledged that this value was substantially above values used by the major radiation protection organizations. Tr. 1645-49.

64. Dr. Morgan's risk estimator is also beyond the range of the values considered in the FES (140 to 500/10⁶ person-rem). Stf. Ex. 3 at 4.5.5.

65. Dr. Morgan's genetic risk estimator appears to be 44,000 potential genetic defects per million person-rem. Tr. 2495-96. He maintained that his estimator was derived from Table 4, page 57 of the BEIR I Report. Tr. 2499.

66. However, the 44,000 defects were far above the highest value (1500) that can be derived from Table 4. Tr. 3727-28. Thus, Dr. Morgan has not established a bases for his genetic risk estimator.

Predicted Health Effects from Operation

67. Drs. Hamilton and Branagan found that 1300 person-rem per year is a conservative estimate of dose for the calculation of health effects because it is the highest exposure observed at any plant and is not the average exposure. Tr. 2467-68.

68. Dr. Morgan used this dose to compute the health effects from operation since it was comparable to his estimate of 1500 person-rem for annual population dose. Tr. 2489-93. He multiplied the 1300 person-rem/year figure by his somatic risk estimator (900 cancers per million person-rem) and by 30 (years) to obtain an estimate of 35 potential lethal cancers and 70 potential non-lethal cancers during plant operation. Tr. 2494.

69. Dr. Branagan estimated that there would be 15 potential cancer deaths for a 30-year operation of the plant. Tr. 2463.

70. Dr. Branagan did not calculate the potential non-lethal cancers, but the FES noted that the BEIR III Report estimates that the number of non-fatal cancers would be 1.5 to 2 times the number of potential fatal cancers. Stf. Ex. 3 at 4-25.

71. The risk of potential premature cancer death to the individuals of the general public living within 50 miles of the plant from exposure to radiation release is less than one percent of the risk to the maximum individual. Stf. Ex. 3 at 4-28. This risk is insignificant in comparison to the risk of premature death from cancer from exposure to other sources of radiation in the U.S. *Id.*, Hamilton Affidavit, ff. Tr. 2380, at 2.

72. Dr. Hamilton estimated that 16 potential cancer deaths could result from 30-year operation of the plant and the uranium fuel cycle. Tr. 2410.

73. Since the dose estimate used in evaluation of potential cancer deaths was the same for all 3 witnesses, the substantial difference in estimated deaths between Dr. Morgan on one hand and Drs. Branagan and Hamilton on the other, lies in the somatic risk estimator used.

74. The Staff arrived at a figure of 0.3 genetic disorders in all future generations of the exposed workforce population due to one year of operation by multiplying their genetic risk estimator (260 potential genetic disorders per million person-rem) by the annual plant worker dose. Stf. Ex. 4 at 4.5.5.

75. For 30 years of operations the result would be 9 potential genetic disorders. The highest value for a genetic risk estimator from BEIR I would yield approximately 60 potential genetic defects. Tr. 3827-28.

76. From his genetic risk estimator of 44,000 genetic defects per million person-rem, Dr. Morgan calculated 1700 genetic disorders from plant operation over the life of the plant. Tr. 2496.

Basis for Disagreement on Estimation of Risk

77. Dr. Morgan stated that the risks of low-level exposure to ionizing radiation are greater than indicated by Applicants and Staff because they relied upon reports which underestimated risk. These reports included those from the National Council on Radiation Protection and Measurement, the International Commission on Radiological Protection, the United Nations Committee on the Effects of Atomic Radiation, and the BEIR Committee I, II and III reports. Tr. 1548-49. Dr. Morgan testified that in evaluating genetic effects these organizations relied largely on animal data and on the general assumption that there is a dose rate effect factor at very low doses which makes the genetic risk about one-sixth of that at high doses. Tr. 1550. Dr. Morgan believed it best to assume that there is no dose rate effect and thus genetic damage would increase with an increase in dose. Tr. 1551. He argued that it is difficult to go from animal data to human health effects without reaching false conclusions due in part to the heterogeneity of the human population versus

the animal population. Tr. 1560-65. Dr. Morgan testified that somatic effects in animals are similar to those in man but genetic effects are different. Tr. 1674-75.

78. Dr. Hamilton testified that animal studies are useful in calculating the genetic risk to man in the absence of direct human evidence since they can reveal the shape of dose-effect curves and the mechanisms by which radiation induces cancer or lesions. Tr. 2361-64. For example, animal studies have shown that a dose spread over a long period of time is not as harmful as the same dose given over a short period because the experiments have shown that repair mechanisms affect radiation damage. *Id.*; Tr. 2466. Dr. Hamilton agreed with Dr. Morgan that in calculating genetic effects one assumes for conservatism that there is no repair mechanism; therefore, one would not apply the dose rate effect factor of 6. Tr. 2362-63. The Staff also did not use a dose rate effect factor in its estimates of health effects. Tr. 2399.

79. Dr. Morgan argued that the super linear dose model would give the most appropriate risk estimates of low-level radiation because it recognizes that there are radiosensitive subgroups in the population. Tr. 1564. The super linear model of dose response gives a higher cancer rate (the number of potential cancers per rem) at low doses than at high doses. Tr. 1664. Dr. Morgan noted that a General Accounting Office Report which was published subsequent to the BEIR III Report also selected the super linear hypothesis as the best fit for certain data. Tr. 1570-71. Dr. Morgan commented that the linear risk model received a mixed review in the BEIR III Report because some members argued that the linear response model overestimates the risk while others argued it underestimated the risk. Tr. 1570.

80. Applicants' and Staff's witnesses rejected the claim that the linear model underestimated health effects. See *e.g.*, Tr. 2394, 2422. They offered several reasons for rejecting the super linear model to estimate health effects. Dr. Hamilton testified that he would not place more weight on the January, 1981 GAO Report than on the 1980 BEIR Report solely because the former had a later publication date. Tr. 2420. He commented that he would not equate a report prepared for budgetary purposes with a scientific document such as BEIR or UNSCEAR. *Ibid.* In Dr. Hamilton's opinion the greater heterogeneity of the human population does not lead to the conclusion that the super linear model is best. Tr. 2421-22. The super linear model would be better only if a substantial number of people were supersensitive to radiation; Dr. Hamilton believes that there is nothing to support the idea that there are a substantial number of supersensitive people. Tr. 2421-22. Smokers are not supersensitive because smoking only adds to the risk of cancer. Tr. 2424. The BEIR III Report also concluded that the greater genetic diversity in humans than in inbred laboratory animals would favor a linear dose effect. Tr. 2367-68.

81. Dr. Morgan argued that the Applicants refused to consider the research and conclusions of Drs. Stewart, Mancuso, Bross and Najarian. Morgan Affidavit, ff. Tr. 1545, at 14.

82. Drs. Hamilton and Branagan agreed that the BEIR III Report had thoroughly reviewed the works of Dr. Bross who attempted to identify groups with increased susceptibility to radiation, and concluded that Dr. Bross had not revealed any evidence to show that risks were greater than conventional estimates. BEIR III also reviewed the Mancuso, Stewart and Kneale data on cancer risks and the Najarian and Colton study and found that the conventional risk estimates were not affected. Tr. 2481-83; Hamilton Affidavit, ff. Tr. 2380, at 7-9.

83. Dr. Hamilton admitted that the BEIR I and III Reports have some inconsistencies in each report, but those inconsistencies do not affect the major conclusion regarding risk estimates. Tr. 2447.

84. Drs. Branagan and Hamilton both emphasized that the absolute risk model was advocated in BEIR I, BEIR III, UNSCEAR 1977, UNSCEAR 1972 and ICRP Publication 26 for low-LET radiation, the type of radiation emitted from nuclear power reactors. Tr. 2478.

Validity of Human Risk Estimations

85. In its denial of the Applicants' motion for summary disposition on this contention, the Board recognized that Dr. Morgan contested the reliability of human risk estimates used by the standard-setting bodies because (1) the population samples used in the health effects studies reviewed by the BEIR Committee for Hiroshima and Nagasaki and for ankylosing spondylitis were statistically biased and hence yielded unreliable results; and (2) a recently reported study of the atomic bomb dosimetry indicated that earlier reports relied upon by the BEIR Committees underestimated the gamma radiation to which the populations at Hiroshima and Nagasaki were subjected.

86. Dr. Morgan testified that the BEIR Report which Applicants and Staff used in their risk estimates relies primarily on the atomic bomb data. Morgan Affidavit, ff. Tr. 1545, at 5; Tr. 1552-53. The studies of the survivors of Hiroshima and Nagasaki had errors in dosimetry and thus health effects were underestimated, due to the high doses involved, the inadequate length of the study, and the failure of the BEIR Committee to correct for the effects of trauma and fire blasts. *Id.* at 3-8; Tr. 1556-57.

87. Dr. Hamilton also testified that risk estimators are based almost entirely on human data which were thoroughly reviewed by UNSCEAR and BEIR Committees, and that the most useful data for deriving quantitative dose estimates are the Hiroshima and Nagasaki data. Tr. 2326. Dr. Hamilton noted that Dr. Baum had tried to manipulate the Hiroshima-Nagasaki data to challenge the linear dose

response curve for risk estimates; however, the BEIR I Report reviewed the data and maintained its support for the linear dose response curve. Tr. 2365-67.

88. Dr. Morgan argued that the Japanese survivors were a select population because they died of common diseases before they could contract cancer. Dr. Morgan viewed a May 22, 1981 article in *Science* (Attachment 3 to Branagan Rebuttal Testimony, ff. Tr. 2407) as evidence that the doses at Hiroshima and Nagasaki were seriously overestimated. In Dr. Morgan's opinion, an overestimate of dose would yield fewer cancers per person-rem. Hence, the linear model for dose response and the risk estimators that were derived from the atomic bomb data underestimate the health effects. Morgan Affidavit, ff. Tr. 1545, at 3-8.

89. Drs. Hamilton and Branagan disagreed with the assertion that the Japanese data were unreliable and stated that the data were in general agreement with other human studies. Tr. 2343, 2396. Dr. Branagan also pointed out that the BEIR committee, contrary to Dr. Morgan's claim, had considered the effects of fire blast and trauma. Tr. 2396-97; Branagan Rebuttal Testimony, ff. Tr. 2407, at 6. Both witnesses also rejected the May *Science* article as evidence that risk estimates should be changed. Both referred to a June 19, 1981 article in *Science* (*id.* at Attachment 4) that rebuts the conclusion drawn in the May article by indicating that the majority of the scientists in attendance at the conference reported in the June article felt the change in risk estimates would be slight. *Id.* at 7-9; Tr. 2340-42. Both witnesses also noted that some of the principal authors of the studies reevaluating the atomic bomb data had written letters to the editor of *Science* to complain that the May article was misleading. Drs. Hamilton and Branagan did not consider the May article which appeared in the "News and Comment" section of *Science* to be the kind of material on which experts would rely. *Ibid.* Dr. Branagan also testified that the BEIR Report had found Dr. Morgan's hypothesis that a high infection rate existed in Hiroshima and Nagasaki was not supportable because, to the contrary, there were no widespread epidemics in Hiroshima and Nagasaki. Tr. 2397.

90. Both Drs. Branagan and Hamilton testified that the major radiation protection organizations considered a wide body of data to derive their risk estimates. Tr. 2396-97, 2415. Dr. Hamilton rebutted Dr. Morgan's hypothesis that most of the patients suffering from ankylosing spondylitis died of common diseases before developing cancer and noted that studies have shown that spondylitics have the same incidence of cancer as the normal population. Tr. 2356-61, 2449-57. Dr. Branagan further testified that according to the BEIR III Report, risk estimators based on exposure to high doses (e.g., the spondylitic data) may possibly overestimate the risks. Branagan Rebuttal Testimony, ff. Tr. 2407, at 7.

Risks from the Uranium Fuel Cycle

91. The Staff estimates of health effects from the uranium fuel cycle were based upon the release values in Table S-3 and an analysis of radon releases. The Staff considered the short-term effects of mining, milling and active tailings, and the potential long-term effects from unreclaimed open-pit mines and stabilized tailings. The estimated health effects as a result of radon releases of a 1000-MW light water reactor operating at 80% capability for 30 years would be 3.3 to 5.7 cancer fatalities in a span of 100 years, 5.7 to 17 in 500 years, and 36 to 60 in 1000 years. These estimated health effects from radon-222 and other nuclides released from the fuel cycle are, however, a small fraction of those from natural background radiation. The Staff concluded that health effects from the uranium fuel cycle are insignificant in comparison to the potential health effects to the U.S. population from all background sources of radiation. Stf. Ex. 3 at 4.7.5.

92. Dr. Branagan testified that the favorable cost-benefit balance reached in the FES would not change if the radon release values adopted by the Appeal Board in the *Peach Bottom* proceeding were used. He noted that the radon release rate of 6600 curies per annual fuel requirement used by the Appeal Board was comparable to the 5190 release rate used in the FES. The long-term release rate of 91 curies per annual fuel requirement per year (Ci/AFR/yr) where the tailings are covered and the mines are left unsealed would not cause health effects significantly different from those resulting from the variable releases estimated in the FES (38 Ci/AFR/yr for the first 100 years, 47 Ci/AFR/yr for the next 400 years and 137 Ci/AFR/yr for periods beyond 500 years). Tr. 3829-30.

93. Dr. Hamilton agreed with the Staff that the dose to the public from the uranium fuel cycle is small in comparison to background. Tr. 2378-79; Hamilton Affidavit, ff. Tr. 2380, at 2. He estimated that the increased individual cancer mortality risk, based upon a 900 MW electric plant operating at 80% capacity would be minute (5.13×10^{-11}). Prefiled Testimony Concerning the Health Effects of Uranium Mining and Milling, ff. Tr. 2380, at 6-7. He concluded that the incremental cancer risk from the uranium fuel cycle attributable to the Summer facility was very small, particularly in comparison to natural background. *Id.* at 7-9.

Principal Findings

94. Considering all the evidence, the Board finds that the Applicants and Staff have not underestimated health effects. The Board gave considerable weight to the large body of evidence supporting the risk estimators used by the Staff and Applicants contained in the BEIR I Report which are in substantial agreement with those published by other highly regarded organizations such as the ICRP, NCRP and UNSCEAR. We accept Dr. Branagan's statement that these organizations

represent the views of the overwhelming majority of the members of the scientific community. Branagan Rebuttal Testimony, ff. Tr. 2407, at 3.

95. Dr. Morgan's arguments that the A-bomb survivors were a selected population are met by the BEIR III Report which argues that these risk estimates have survived the test of consistency with other human data. We are not persuaded that ankylosing spondylitis data represented a selected population and underestimate risk because other factors such as difference in dose and dose rate have not been taken into account. Since actual dose and dose rates to individuals in the vicinity of the Summer plant will be much less than in these patients, this may result in the risk estimator in the FES (which is based in part on ankylosing spondylitis) actually overestimating risk. *Id.* at 7.

96. The Board finds it is premature to give much weight to Dr. Morgan's opinion that a May 22, 1981 article in *Science* indicating that an overestimate of dose in the A-bomb studies will result in risk greater than that concluded in the BEIR III Report. These data are preliminary and await further evaluation. However, even if we accept the opinion of the minority and more conservative members of the scientific community who have commented upon these new results (*e.g.*, Dr. Radford) it appears that the adjusted risk estimates are consistent with those used in the FES. *Id.* at 9.

97. The Staff weighed the benefits of plant operation against a variety of costs and concluded that the "environmental and social costs of the plant are acceptable, and the total costs (including economic) are outweighed by the benefits of added capacity, energy produced, potential cost savings and increased reliability." Stf. Ex. 3 at 9.7.

98. Dr. Morgan did not offer substantial evidence to challenge the favorable cost-benefit. Nor does his testimony change the conclusion (Stf. Ex. 3 at 9.4) that the radiation releases of normal operation will not have a measurable impact on humans. See Stf. Ex. 3 at 4.5.5; Tr. 2465. As Dr. Morgan candidly stated, a dose of one millirem — approximately the estimated maximum individual annual dose to any organ from operation of the Summer facility — adds a risk of dying of cancer, but it is a risk that is extremely small and should be balanced against the benefits. Tr. 1644-45, 1655.

99. The Board finds that the radiological effluents during plant operation are not expected to cause a measurable impact on the human population and that the cost-benefit balance struck at the construction permit stage is in favor of plant operation. We find that the impact of the uranium fuel cycle is insignificant in comparison to health effects in the U.S. population which result from all background sources. See Stf. Ex. 3 at 9.7.

VI. UNRESOLVED GENERIC SAFETY ISSUES

The only generic safety issue that was placed in controversy was that introduced by Intervenor's Contention 3, namely, anticipated transients without scram. As discussed in Part II, above, this contention was dismissed through summary disposition. Having been advised of the Board's interest in the status of generic issues (Tr. 320-321), the Staff included a discussion of generic safety issues applicable to this proceeding in Appendix C of Supplement No. 1 to the Summer SER. Stf. Ex. 1(a), NUREG-0717, April, 1981. Therein, the Staff reviewed each of the relevant unresolved safety issues identified through early 1981 and the associated Task Action Plans that address their resolution. For each of the issues, the Staff concluded that the operation of the Summer facility need not await its ultimate resolution. *Id.* at C-7 thru C-19. The Board reviewed this discussion and found no areas requiring further evidentiary discussion. We concur with the Staff's conclusion and find that Staff has taken the generic safety issues into account in a plausible manner.

VII. CONCLUSIONS OF LAW

Based upon the entire evidentiary record in this proceeding, and upon the foregoing findings of fact, the Board reaches the following conclusions:

1. Subject to the conditions set forth in our Order, below, Applicants have made adequate preparations for the implementation of its emergency plan in those areas where the assistance and cooperation of state and local agencies are required.

2. Where Applicants have not yet met the conditions set forth in our Order, below, and have, therefore, failed to meet the standards of 10 CFR §50.47(b), the deficiencies in the emergency plans are not significant, within the meaning of 10 CFR §50.47(c)(1), to prevent plant operation.

3. Staff is insuring that all deficiencies noted by FEMA and NRC for the May 1, 1981 emergency exercise are being remedied.

4. Quality control has been adequate and acceptable during the construction of the Summer plant.

5. The long-term health effects from radiation releases during normal operation, and from the uranium fuel cycle, have not been sufficiently underestimated, if at all, to compromise the favorable cost-benefit balance struck at the construction permit.

VIII. ORDER

WHEREFORE, in accordance with the Atomic Energy Act of 1954, as amended, and the Rules of Practice of the Commission, and based on the foregoing

Findings of Fact and Conclusions of Law and this Board's Partial Initial Decision and Supplemental Partial Initial Decision, IT IS ORDERED THAT the Director of Nuclear Reactor Regulation is authorized, upon making such additional findings on all other matters specified in 10 CFR §50.57(a) as may be necessary, to issue a full-term operating license consistent with the terms of this Initial Decision, subject to the following conditions:

1. That seismic monitoring be continued at least until December 31, 1983, and that Staff reevaluate at that time the need for further monitoring to be made an additional licensing requirement;

2. That Applicants successfully complete during the first year of operation the confirmatory program on plant equipment and components, within the guidelines established in the Partial Initial Decision Findings, to demonstrate to Staff's satisfaction that explicit safety margins exist for each component necessary for shutdown and continued heat removal in the event of the maximum potential shallow earthquake;

3. That plume exposure EPZ is to be expanded to include the Kelly Miller, Greenbriar Headstart and Chapin Elementary schools and the emergency evacuation plans are to be adjusted accordingly within the first year of operation of the Summer facility;

4. That the defects in transportation planning discussed in Finding 24, *supra*, be remedied during the first year of operation of the Summer facility.

5. That plans to implement remedial and preventive measures for consumer protection against food pathway contamination are to be formulated and communicated to the agricultural community during the first year of operation of the Summer facility;

6. That the completion of installation and satisfactory testing of Applicants' siren alerting system must be accomplished prior to operation of the Summer facility above 5% of full power;

7. That the following three items related to emergency preparedness must be completed by Applicants (to the satisfaction of the Staff), consistent with NUREG-0717, Supp. 2, at A-13:

minimum shift manning requirements, emergency response facilities, and meteorological and dose assessment capability.

8. That final NRC approval of the state of emergency preparedness for the Summer site is to be given prior to operation of the Summer facility above 5% of full power;

9. That the NRC Staff will satisfy itself that appropriate surveillance measures and remedial action plans are being implemented with respect to the steam generator tube failure problem prior to operation of the Summer facility at full power.

IT IS FURTHER ORDERED, in accordance with 10 CFR §§2.760, 2.762, 2.764, 2.785, and 2.786, that this Initial Decision shall become effective and shall

constitute, with respect to the matters covered herein, the final decision of the Commission 30 days after the date of issuance hereof, subject to any review pursuant to the above cited Rules of Practice. Exceptions to this decision may be filed within ten (10) days after service of this Initial Decision. A brief in support such exceptions may be filed within thirty (30) days thereafter, forty (40) days in the case of the Staff. Within thirty (30) days after service of the brief of appellant, forty (40) days in the case of the Staff, any other party may file a brief in support of, or in opposition to, such exceptions.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

**Gustave A. Linenberger
ADMINISTRATIVE JUDGE**

**Dr. Frank F. Hooper
ADMINISTRATIVE JUDGE**

**Herbert Grossman
ADMINISTRATIVE JUDGE**

**Dated at Bethesda, Maryland,
this 4th day of August, 1982**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Charles Bechhoefer, Chairman
Dr. George C. Anderson
Ralph S. Decker**

In the Matter of

**Docket Nos. 50-409-FTOL
50-409-SC
(Full-Term Operating License
and Show Cause)**

**DAIRYLAND POWER COOPERATIVE
(La Crosse Bolling Water Reactor)**

August 2, 1982

The Licensing Board grants the motions of the NRC Staff and Applicant for summary disposition of all environmental contentions and concludes its consideration of other environmental questions which had arisen during the course of this full-term operating license proceeding.

RULES OF PRACTICE: SUMMARY DISPOSITION

The Commission and Appeal Board have encouraged the use of summary disposition to resolve contentions where an intervenor has failed to establish that a genuine issue exists.

RULES OF PRACTICE: SUMMARY DISPOSITION

The Commission's summary disposition procedures have been analogized to Rule 56 of the Federal Rules of Civil Procedure. Decisions arising under the

Federal Rules thus may serve as guidelines to licensing boards in applying the Commission's summary disposition procedures.

RULES OF PRACTICE: SUMMARY DISPOSITION

The burden of proof lies upon the movant for summary disposition, who must demonstrate the absence of any issue of material fact. If a movant fails to make the requisite showing, its motion may be denied even in the absence of any response by the proponent of a contention.

RULES OF PRACTICE: SUMMARY DISPOSITION

Where a movant for summary disposition fails to include the requisite "separate, short and concise statement of the material facts as to which the moving party contends that there is no genuine issue to be heard," or where the statement is inadequate, a Board may dismiss the motion for summary disposition as procedurally defective or, alternatively, can decline to give the statement the effect it would otherwise be accorded.

ATOMIC ENERGY ACT: APPENDIX I

Compliance with the design objectives set forth in 10 CFR Part 50, Appendix I, establishes that the doses to offsite individuals are as low as reasonably achievable.

NEPA: RULE OF REASON

To warrant consideration of alleged environmental effects of plant operation at an evidentiary hearing, more must be shown than that those effects are theoretically possible.

NEPA: COST-BENEFIT BALANCE

Unless a nuclear plant has environmental disadvantages in comparison to reasonable alternatives, differences in financial costs do not enter into the NEPA process and, hence, into NRC's cost-benefit balance. Only after an environmentally superior alternative has been identified do economic considerations become relevant.

NEPA: CONSIDERATION OF ALTERNATIVES

Issues concerning alternative energy sources in general may no longer be considered in operating license proceedings.

NEPA: NEED FOR POWER

Issues raising need for power in general may no longer be considered in operating license proceedings. Lack of a previous NEPA review would not be the type of "special circumstance" needed to justify such consideration.

NEPA: SCOPE OF INFORMATION REQUESTED FOR LICENSING (CLASS 9 ACCIDENTS)

In proceedings instituted prior to June, 1980, serious (Class 9) accidents may be considered only upon a showing of "special circumstances."

MEMORANDUM AND ORDER

(Granting NRC Staff's Motion, as Amended, and Applicant's Motion for Summary Disposition of Environmental Contentions and Ruling Upon Other Environmental Questions)

Pending before us are the NRC Staff's motion for summary disposition, as amended, and the Applicant's motion for summary disposition, of all environmental contentions in this full-term operating license proceeding. For the reasons which follow, we are granting those motions and concluding our consideration of various environmental questions which have arisen during the course of this proceeding.

I. BACKGROUND

The La Crosse Boiling Water Reactor (LACBWR) is a 50 MWe boiling water reactor located on a site on the Mississippi River in Genoa, Wisconsin, about 20 miles south of La Crosse, Wisconsin. It is owned and operated by Dairyland Power Cooperative (Applicant or DPC). LACBWR is currently permitted to operate by

virtue of Provisional Operating License DPR-45, and the Applicant is seeking a full-term operating license (FTOL) for the reactor.¹

LACBWR was built as part of the U.S. Atomic Energy Commission's second-round power reactor demonstration program by Allis-Chalmers Manufacturing Company under a contract with the Commission signed in June 1962.² The site for the reactor was provided by DPC.³ Construction was authorized pursuant to Construction Authorization CAPR-5 dated March 29, 1963,⁴ and operation commenced in July, 1967 pursuant to Provisional Operating Authorization No. DPRA-5.⁵ In August, 1973, DPC purchased the facility from the AEC, and Provisional Operating License No. DPR-45 was issued on August 28, 1973.⁶

Dairyland's provisional operating license had a term of 18 months. On October 9, 1974, prior to the expiration of that term, DPC filed an application to convert its provisional license to a full-term operating license.⁷ That application is presently before this Board. Pursuant to 10 CFR §2.109, the provisional operating license remains in effect until a final NRC determination on the full-term operating license is rendered. DPC has been operating LACBWR under that authority during the pendency of this proceeding.

The Notice of Opportunity for Hearing on the requested full-term operating license was published on April 10, 1978.⁸ A timely petition for leave to intervene was filed by the Coulee Region Energy Coalition (CREC) on May 7, 1978.⁹ A Licensing Board was established to rule on such petitions.¹⁰ By Memorandum and Order dated June 19, 1978, CREC's petition was granted.

On August 17, 1978, the Board held a Special Prehearing Conference in La Crosse, Wisconsin. Insofar as matters relating to the FTOL proceeding were

¹ The proceeding designated as Docket No. 50-409-FTOL concerns Dairyland's application for such a license.

² Final Environmental Statement (FES), §1.1.

³ *Id.*

⁴ See 43 *Fed. Reg.* 15021 (April 10, 1978).

⁵ FES, §1.1; 43 *Fed. Reg.* 15021 (April 10, 1978). The operating authority was first granted to Allis-Chalmers and, on October 31, 1969, was transferred to Dairyland. *Dairyland Power Cooperative (La Crosse Boiling Water Reactor)*, LBP-80-2, 11 NRC 44, 47 (1980), *affirmed* (in pertinent part), ALAB-617, 12 NRC 430 (1980).

⁶ FES, §1.1.

⁷ LBP-80-2, n.5, *supra*, 11 NRC at 47.

⁸ 43 *Fed. Reg.* 15021.

⁹ On May 5, 1978, Farmers United for Safe Energy (FUSE) requested a 30-day extension within which to file a petition. By Memorandum and Order dated May 17, 1978, FUSE's request was granted. FUSE did not file any petition.

¹⁰ 43 *Fed. Reg.* 21955 (May 22, 1978). The same Board was authorized to conduct the hearing. 43 *Fed. Reg.* 28261 (June 29, 1978). On several occasions it has been reconstituted. 43 *Fed. Reg.* 37017 (August 21, 1978); 43 *Fed. Reg.* 46911-12 (October 11, 1978). The same Board was established for a simultaneous spent fuel storage pool expansion proceeding, which has since been concluded, LBP-80-2, n.5 *supra*, 11 NRC at 47-48; and for a concurrent show-cause proceeding. 45 *Fed. Reg.* 52290 (August 6, 1980).

considered at this conference,¹¹ we determined to proceed first with the spent fuel pool expansion proceeding, next to consider environmental issues in the FTOL proceeding, and to delay any further consideration of safety issues in this FTOL proceeding until issuance of the Staff's Safety Evaluation Report (SER). (The SER has not at this time been issued, since it is awaiting the completion of the Staff's Systematic Evaluation Program (SEP) review of this reactor.) We identified the contentions which were to be considered as environmental issues, requested the parties to negotiate to determine whether the language and suitability of environmental contentions could be stipulated, called for a further report or reports on these negotiations, and deferred ruling on environmental issues until after our receipt of those reports. Prehearing Conference Orders, dated September 5, 1978 (unpublished).

Reflecting both delays in the projected issuance of the Staff's Final Environmental Statement (FES) and the engagement of the parties in discovery and evidentiary hearings in the companion spent fuel pool expansion proceeding, we postponed ruling on the FTOL environmental contentions until November 30, 1979. At that time, we admitted contentions 2A, 2B, 8, 9, 19 and 22 (with all parties agreeing to the acceptability of the latter three contentions) and established a discovery schedule.

The NRC Staff filed extensive discovery requests during December 1979 and the Spring of 1980. The FES was served by the Staff on the parties and Board by letter dated April 21, 1980.¹² Shortly thereafter, on May 21, 1980, we issued a Memorandum and Order (unpublished) which posed certain questions which arose from our preliminary review of the FES, and we scheduled a prehearing conference for June 19, 1980, to consider, *inter alia*, the most appropriate manner for our inquiries to be addressed.

On June 6, 1980, the NRC Staff filed a motion for summary disposition covering all environmental contentions admitted to this proceeding. On June 10, 1980, we issued a Memorandum (unpublished) which invited the parties to discuss at the forthcoming prehearing conference their plans for responses to the Staff's motion. That Memorandum also invited comments on the effect, if any, of the Commission's newly issued policy statement concerning the treatment in environmental reviews of the probabilities and consequences of serious (formerly "Class 9") accidents. On June 16, 1980, prior to the prehearing conference, the Staff provided answers to the questions we had posed on May 21, 1980. (The Applicant provided its answers to those questions on July 11, 1980.)

¹¹ The conference was a joint conference concerning both this full-term operating license proceeding and the then-ongoing spent fuel pool expansion proceeding.

¹² Public availability of the FES was announced by *Federal Register* notice published at 45 *Fed. Reg.* 28549 (April 29, 1980).

At the prehearing conference, we heard oral argument on the effect (if any) of the Commission's new policy statement on consideration of the likelihood and effects of serious accidents. In particular, we inquired whether there were any "special circumstances" which might dictate that the policy statement be applied to this proceeding, but we deferred any decision on the applicability of the policy statement. See Second Prehearing Conference Order (unpublished), dated July 8, 1980, pp. 3-4. Later in this opinion (Part IV.A), we conclude that there are no special circumstances which would cause us to invoke the policy statement in this proceeding.

At the prehearing conference, we also discussed the factual presentation which CREC wished to offer on each of its contentions, both in response to the Staff's summary disposition motion and at an evidentiary hearing, if one were to be held. CREC's previous discovery response had been quite limited and in part had led to the Staff's motion. CREC indicated, however, that it possessed additional information of which it had become aware subsequent to its earlier discovery response. As a result, we agreed that CREC would supplement its discovery response and, thereafter, the Staff would revise its summary disposition motion to the extent appropriate. Finally, as a result of portions of the FES which we considered to be of questionable acceptability, we propounded several additional questions to the parties. Second Prehearing Conference Order, *supra*, pp. 4-6. The Staff provided answers to these questions on August 29, 1980.

CREC provided a lengthy supplemental response to NRC Staff interrogatories on July 17, 1980. In response to second-round discovery requests (which we permitted by our Order (unpublished) dated July 29, 1980), CREC provided additional information on September 10, 1980. Thereafter, in response to CREC's request (which all parties had supported), the Board by Order dated September 29, 1980 granted a postponement of the schedule for the operating license proceeding until the completion of the parties' obligations in the simultaneous show-cause proceeding involving the potential for liquefaction at the LACBWR site.¹³ That proceeding was before this same Board, and CREC was a party in both proceedings. Mr. Frederick M. Olsen, III was also admitted as an intervenor in the show-cause proceeding and was consolidated with CREC for purposes of participation in that proceeding. On February 24, 1981, we issued a Partial Initial Decision in the show-cause proceeding which disposed of all issues but one. LBP-81-7, 13 NRC 257. Because that remaining issue paralleled one of the safety matters involved in the full-term operating license application, we granted the Staff's request to consolidate the two proceedings by our Memorandum and Order (Consolidating Show-Cause and Operating License Proceedings), LBP-81-31, 14 NRC 375 (August 19, 1981). In doing so, we ruled that the pretrial procedures in

¹³ The show-cause proceeding is designated as Docket No. 50-409-SC.

the FTOL proceeding which had been suspended by our Order of September 29, 1980 could be resumed.

Shortly thereafter, on September 9, 1981, the NRC Staff filed an amendment to its motion for summary disposition of all environmental contentions. On September 11, 1981, we issued a Memorandum establishing a schedule for responding to the Staff's motion and posing a question concerning the potential applicability of certain proposed Commission regulations. (See discussion of contentions 19 and 22, *infra*.) The Applicant on October 5, 1981 (corrected on October 7) filed a response in support of the Staff's amended motion which also responded to the Board's inquiry. In its response, the Applicant noted that it was in the process of preparing its own motion for summary disposition of environmental contentions. On October 5, 1981, the Staff filed comments on the Board's inquiry. Because of a change of address of CREC's representative (of which the Board had not been informed prior to our receipt of the NRC Staff's letter of October 8, 1981), we extended the time for CREC to respond to the Staff's motion until November 2, 1981. See Memorandum dated October 13, 1981. CREC has failed to respond to the Staff's amended motion.

During a telephone conference call on November 12, 1981, upon being apprised that the Applicant's motion for summary disposition was still forthcoming, we informed the parties that we would await the filing of that motion, and responses thereto, before ruling on either the Staff's or Applicant's motion. We also were advised that the Staff would consider filing affidavits providing certain additional information relevant to the seismic question which remained from the show-cause proceeding. See Memorandum (Concerning Telephone Call), dated November 13, 1981.

The Staff filed this additional seismic information on January 28, 1982. On February 2, 1982, the Applicant filed its motion for summary disposition of environmental contentions. By Order dated February 5, 1982, we established schedules for responding to these filings. The Staff advised us that it did not intend to respond to the Applicant's motion, and the Applicant has advised that it will not respond to the Staff's seismic affidavit. CREC has not responded to the Applicant's motion, and neither CREC nor Mr. Olsen has responded to or commented upon the Staff's seismic affidavit.

As a result of certain apparent internal inconsistencies in the Staff's January 28, 1982 seismic affidavit, we initiated a telephone conference call on July 1, 1982 to identify to the parties certain questions which we had concerning that affidavit. This call was memorialized in a Memorandum dated July 2, 1982, which posed certain questions and called upon the Staff and other parties to provide additional information. We have not yet received any responses to our inquiries and are thus not able to take further action at this time on the outstanding seismic issue.

II. STANDARDS FOR SUMMARY DISPOSITION

The Commission's Rules of Practice provide for summary disposition of certain issues on the pleadings, where "the filings in the proceeding, depositions, answers to interrogatories, and admissions on file, together with the statements of the parties and the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a decision as a matter of law." 10 CFR §2.749(d). The Commission and Appeal Board have encouraged the use of summary disposition to resolve contentions where an intervenor has failed to establish that a genuine issue exists. *Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 & 2), CLI-73-12, 6 AEC 241, 242 (1973), *aff'd sub nom. BPI v. AEC*, 502 F.2d 424 (D.C. Cir. 1974); *Houston Lighting and Power Co.* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542, 550-51 (1980); *Mississippi Power & Light Co.* (Grand Gulf Nuclear Station, Units 1 and 2), ALAB-130, 6 AEC 423, 424-25 (1973). The "summary disposition rule (10 CFR §2.749) provides an ample safeguard against an applicant or the * * * staff being required to expend time and effort at a hearing on any contention advanced by an intervenor which is manifestly unworthy of exploration." *Gulf States Utilities Co.* (River Bend Station, Units 1 and 2), ALAB-183, 7 AEC 222, 228 (1974).

The Commission's summary disposition procedures have been analogized to Rule 56 of the Federal Rules of Civil Procedure. *Cleveland Electric Illuminating Co., et al.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-443, 6 NRC 741, 753-54 (1977); *Alabama Power Co.* (Joseph M. Farley Nuclear Plant, Units 1 & 2), ALAB-182, 7 AEC 210, 217 (1974). Decisions arising under the Federal Rules thus may serve as guidelines to licensing boards in applying 10 CFR §2.749. *Perry*, ALAB-443, *supra* at 754; *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 & 2), LBP-74-36, 7 AEC 877, 878-79 (1974). Under both Federal and NRC rules, the record is to be reviewed in the light most favorable to the party opposing the motion. *Poller v. Columbia Broadcasting System, Inc.*, 368 U.S. 464, 473 (1962); *Crest Auto Supplies, Inc. v. Ero Manufacturing Co.*, 360 F.2d 896, 899 (7th Cir. 1966); *United Mine Workers of America, Dist. 22 v. Roncco*, 314 F.2d 186, 188 (10th Cir. 1963); *Pennsylvania Power & Light Co. and Allegheny Electric Cooperative, Inc.* (Susquehanna Steam Electric Station, Units 1 and 2), LBP-81-8, 13 NRC 335, 337 (1981), *directed certification denied*, ALAB-641, 13 NRC 550 (1981); *Seabrook*, LBP-74-36, *supra*, 7 AEC at 879.

Finally, the burden of proof lies upon the movant for summary disposition, who must demonstrate the absence of any issue of material fact. *Adickes v. Kress and Co.*, 398 U.S. 144, 157 (1970); *Perry*, ALAB-443, *supra*, 6 NRC at 753. Thus, if a movant fails to make the requisite showing, its motion may be denied even in the absence of any response by the proponent of a contention. *Id.* Nonetheless, where a proponent of a contention fails to respond to a motion for summary disposition, it

does so at its own risk: for, if a contention is to remain litigable, there must at least be presented to the Board a sufficient factual basis "to require reasonable minds to inquire further." *Pennsylvania Power and Light Co. and Allegheny Electric Cooperative, Inc.* (Susquehanna Steam Electric Station, Units 1 and 2), ALAB-613, 12 NRC 317, 340 (1980).

Under the NRC Rules of Practice, there is required to be annexed to a motion for summary disposition a "separate, short and concise statement of the material facts as to which the moving party contends that there is no genuine issue to be heard." 10 CFR §2.749(a). Where such facts are properly presented and are not controverted, they are deemed to be admitted. *Id.* The Staff's original motion for summary disposition failed to include the requisite statement. Hence, under *Perry*, ALAB-443, *supra*, the motion could have been dismissed as procedurally defective. Instead, we chose to permit CREC to supplement its discovery responses and to allow the Staff to refile its motion if that course of action were appropriate in light of the supplemented discovery. When the Staff filed its amended motion, it included a statement which is intended to comply with the requirements of 10 CFR §2.749(a). The Applicant's motion also includes such a statement.

In our view, the Staff's statement is marginal, at best. It is clearly "short" and "concise" — consisting of six cursory sentences which are largely negatives of the six contentions which they address. But the sentences are generally more in the nature of legal conclusions which, if accepted, would justify our dismissing the contentions under review. The statement does not for the most part include the facts which, if undisputed, would lead us to reach those legal conclusions. For that reason, we might be justified in dismissing the Staff's motion for lack of adequate support.

Instead, we have taken into account both the substance of the affidavits provided by the Staff and the failure of CREC to have responded to the Staff's motion. Moreover, we are considering the Staff's and Applicant's motions together, on a contention-by-contention basis, and we have taken into account the considerably more detailed statement which accompanied the Applicant's motion. Insofar as the Staff's motion is concerned, however, we will decline to apply that portion of 10 CFR §2.749(a) which provides that "[a]ll material facts set forth in the statement required to be served by the moving party will be deemed to be admitted unless controverted * * *". To the extent we consider contentions on the basis of the Staff's motion, we will limit our consideration to the affidavits and other documentary material before us (including the FES) and the statements made by CREC or the Staff in response to discovery requests. We turn now to the particular contentions to which the motions are directed.

III. RULINGS ON MOTION

The Staff's original motion for summary disposition was supported by the affidavits of Dr. Edward F. Branagan, Jr. (contentions 2A and 8),¹⁴ Dr. John V. Nehemias (contention 2B),¹⁵ Dr. Reginald L. Gotchy (contention 9),¹⁶ Dr. Darrel A. Nash (contention 19),¹⁷ and Dr. Sidney E. Feld (contention 22).¹⁸ The Staff's amended motion included no additional affidavits. The Applicant's motion was supported by the affidavits of Thomas A. Steele (contentions 8 and 19),¹⁹ Irving L. Chait (contention 19),²⁰ and Larry H. Thorson (contention 22).²¹ The Staff's response to the Board's questions of May 21, 1980 was supported by the affidavit of Dr. Robert P. Geckler.²² The Applicant's response to those questions was supported by the affidavit of Thomas A. Steele.²³ The NRC Staff's answers to the questions we posed at the June 19, 1980 prehearing conference were supported by the affidavit of James J. Shea.²⁴ In addition, in response to a request for admissions by CREC, the NRC Staff presented the affidavit of Ralph Caruso.²⁵

We will now address each of CREC's contentions, *seriatim*.

A. Contention 2A reads as follows:

- 2A. CREC contends that the excessive off-gas emissions from LACBWR are inimical to public health and safety, and fail to comply with the restrictions set forth in 10 CFR Part 50, Appendix I.

Contrary to CREC's assertion that off-gas emissions from LACBWR are excessive, both the Applicant's and Staff's motions for summary disposition point

¹⁴ Affidavit of Dr. Edward F. Branagan, Jr., Environmental Scientist, Radiological Assessment Branch, Division of Systems Integration, Office of Nuclear Reactor Regulation (NRR), NRC, dated May 20, 1980 (hereinafter "Branagan Aff.").

¹⁵ Affidavit of Dr. John V. Nehemias, Senior Health Physicist, Radiological Assessment Branch, Division of Site Safety and Environmental Analysis, NRR, dated May 15, 1980 ("Nehemias Aff.").

¹⁶ Affidavit of Dr. Reginald L. Gotchy, Senior Radiobiologist, on assignment with the Radiological Assessment Branch, Division of Systems Integration, NRR, dated June 5, 1980 ("Gotchy Aff.").

¹⁷ Affidavit of Dr. Darrel A. Nash, Section Leader, Utility Section, Utility Finance Branch, Division of Engineering, NRR, dated May 21, 1980 ("Nash Aff.").

¹⁸ Affidavit of Dr. Sidney E. Feld, Regional-Environmental Economist, Utility Finance Branch, Division of Engineering, NRR, dated May 16, 1980 ("Feld Aff.").

¹⁹ Affidavits of Thomas A. Steele, Director of Environmental Affairs, Dairyland Power Cooperative, dated December 1, 1981 and December 11, 1981 ("Steele Aff. 2 and 3").

²⁰ Affidavit of Irving L. Chait, Manager, Power, Environmental and Electrical Systems Planning Group, Power Technology Division, Burns and Roe, Inc., dated December 18, 1981 ("Chait Aff.").

²¹ Affidavit of Larry H. Thorson, Manager of Energy Conservation and Load Management, Dairyland Power Cooperative, dated December 4, 1981 ("Thorson Aff.").

²² Affidavit of Dr. Robert P. Geckler, Senior Environmental Project Manager, Environmental Engineering Branch, Division of Engineering, NRR, dated June 16, 1980 ("Geckler Aff.").

²³ Affidavit of Mr. Steele (see n. 19) dated July 11, 1980 ("Steele Aff. 1").

²⁴ Affidavit of James J. Shea, Project Manager for LACBWR, dated August 29, 1980 ("Shea Aff.").

²⁵ Affidavit of Ralph Caruso, Project Manager for LACBWR, dated August 21, 1981 ("Caruso Aff.").

out that the plant complies with design objectives set forth in 10 CFR Part 50, Appendix I. These regulations set numerical design objectives for limiting the doses to offsite individuals to as low as reasonably achievable (ALARA). Thus, a showing that a facility's releases are within Appendix I design objectives establishes conformance to the ALARA requirement (see 10 CFR §§20.1(c), 50.34a and 50.36a) and it follows that the emissions are therefore neither excessive nor inimical to public health and safety.

The dose levels set forth in the FES show that operation of LACBWR falls within the design objectives of Appendix I (FES §§3.6.3; 5.5.2; 5.5.3). This is further substantiated by Dr. Branagan in his affidavit where he explains that the noble gases released are less than 75% of the design objectives of Appendix I and particulate releases are less than one-fifth of the objectives (Branagan Aff., pp. 2-3).

The Board inquired into the method of computing offsite doses from airborne effluents in accordance with Reg. Guide 1.109, which the Staff had used in estimating radiation doses to individuals near the plant (FES, §5.5.1). Dose models in Reg. Guide 1.109 are independent of the type of terrain, whereas the area surrounding LACBWR is not flat. In response, James Shea stated that the effect of changes in topography on dose estimates are taken into account in the atmospheric transport and dispersion model described in Reg. Guide 1.111 (Shea Aff., p. 2). This model was used in conjunction with the terrain heights in the LACBWR region to determine the dilution factor used in the dose assessment (FES, Appendix E).

CREC has not presented any factual basis or explanation for its allegation that off-gas emissions from LACBWR are excessive and fail to comply with Appendix I restrictions. It has provided no information, evidence, data or knowledge to raise any issue of fact concerning off-gas emissions from LACBWR, nor did it respond to either the Applicant's or the Staff's motion for summary disposition. Indeed, from its responses to discovery, it is clear that what CREC is really claiming is that off-gas emissions from LACBWR are more than 0 and hence are excessive. Given the provisions of 10 CFR Part 50, Appendix I, as described above, such a claim cannot be entertained by us. See 10 CFR §2.758(a). We agree with the Applicant's and Staff's showing that LACBWR operation meets Appendix I design objectives. Summary disposition is therefore granted.

B. Contention 2B reads as follows:

2B. CREC contends that the excessive off-gas levels at LACBWR are inimical to the health and safety of plant employees, and fail to comply with the restrictions set forth in 10 CFR Part 20.

Similar to contention 2A, CREC in contention 2B asserts that LACBWR off-gas emissions are excessive. In addition CREC alleges the emissions fail to comply

with the radiation protection standards for plant employees as set forth in 10 CFR Part 20. Again, both the Applicant and Staff cite evidence that CREC's claims are unsupported, LACBWR off-gas emissions are not excessive, and are less than the standards set forth in 10 CFR Part 20.

The Applicant and Staff cite the FES (§5.5.2) to show that employee exposure levels at LACBWR are below 10 CFR Part 20 limits. Furthermore, Dr. Nehemias in his affidavit explains that the 11-year occupational exposure record at LACBWR has been in compliance with Part 20, except for one incident (Nehemias Aff., p. 2). This incident, admitted to by the Applicant, indicated that two individuals had been exposed to airborne concentrations of radioactive materials in excess of 10 CFR Part 20 limits on May 13, 1975 when the reactor vessel head was raised. (We do not understand this incident to represent an exposure resulting from off-gas emissions.) Both the Applicant and Staff deny that this one incident either indicates a significant departure from a good radiation protection program or that it supports the contention that LACBWR fails to comply with the Part 20 restrictions.

The Applicant makes the following additional point. Because annual average exposure to LACBWR employees has been well below the limits in 10 CFR Part 20, the Staff concluded that "there will be no measurable²⁶ radiological impact on man from routine operation" (FES §5.5.3). Therefore, occupational radiation exposures from any source cannot be deemed excessive and, from this, it follows that occupational exposures from off-gas emissions cannot themselves be excessive. Motion, p. 14.

Both the Applicant and Staff assert that CREC has produced no factual basis for the existence of excessive off-gas emissions or occupational exposure levels. As in the case of contention 2A, the heart of CREC's claim appears to be that any occupational exposures are excessive, even though they are within the limits of 10 CFR Part 20. We cannot entertain that claim. 10 CFR §2.758(a). Moreover, CREC (in responses to discovery) provided no support for its apparent claim that worker exposure calculations are insufficiently precise. Its references to information concerning dosimeter inaccuracies are essentially irrelevant, inasmuch as off-gas emissions (the subject of this contention) by definition occur outside the plant and are monitored there, primarily through means other than dosimeters. Occupational exposures occur mainly within the plant. Off-gas emissions measured outside the plant near the stack are not large enough to contribute a significant fraction of the annual dose to a worker entering, leaving or walking among plant locations. Nehemias Aff., pp. 2-3.

²⁶ The Board questions the statement that the radiological impact from routine operation is not "measurable." Releases are measurable, and the exposure of individuals to such releases itself creates an impact. We are reading the Staff's statement to mean that *adverse* health impacts from routine operation which complies with Part 20 standards are not measurable.

Given the factual information provided by the Applicant and Staff and the failure by CREC to respond to the motion for summary disposition, the Board agrees that off-gas emissions from LACBWR operations comply with the restrictions set forth in CFR Part 20 and that the plant is not inimical to the health and safety of its employees as a result of such off-gas emissions. We therefore grant summary disposition.

C. Contention 8 reads as follows:

8. CREC contends that LACBWR's radiological environmental monitoring program is inadequate in terms of:
- (a) the methodology of the testing,
 - (b) the size and distribution of the sample, and
 - (c) the frequency of the sampling, in the light of the off-gas levels, the geography of the area to the east of the plant, and the fact that the area is primarily a dairy region.

Dr. Branagan, in his affidavit, explains the requirement by NRC that two types of monitoring are necessary to ensure that radioactive effluents are within acceptable limits: radiological effluent monitoring and radiological environmental monitoring (Branagan Aff., pp. 3-4). The latter type of monitoring, which is in controversy in this contention, is necessary to assess the build-up, if any, of measured releases of radioactivity to the environment. In considering the adequacy of the LACBWR radiological environmental monitoring program, the Board was unclear as to what standard had been used in the FES to evaluate that program. Specifically, we requested the parties to address the requirements of recent NRC guidelines on this subject, set forth in a Branch Technical Position (BTP, Revision 1, November, 1979), and whether the present LACBWR program is in compliance with those guidelines. See Board Question 3, May 21, 1980. (Those guidelines were not mentioned in the FES.)

The Staff's analysis (Branagan Aff., pp. 4-6, and related tables) shows that the LACBWR radiological environmental monitoring program complies with the requirements of the BTP.²⁷ The methodology of the program considers the principal pathways of exposure to radioactivity and ensures that they are monitored. Furthermore, the size and distribution of samples collected, as compared with the requirements of the BTP, are adequate to monitor the principal pathways of exposure. DPC is required to participate in an Interlaboratory Comparison Program to ensure the precision and accuracy of the measurements of radioactive material in environmental samples. The frequency of sampling, in compliance

²⁷ After the Licensee applied for conversion of its Provisional Operating License to a FTOL, the BTP was updated to increase the number of direct radiation monitors to 40. The Licensee will be required to meet this standard.

with the requirements of the BTP, ranges from weekly to annual depending upon the type of sample, *e.g.*, milk samples are collected more frequently during the grazing season.

The Applicant's motion for summary disposition states that LACBWR's radiological environmental monitoring program complies with all requirements of the NRC Staff Regulatory Guide 4.1 and the U.S. Environmental Protection Agency (Steele Aff. 2, ¶¶1-3 and Exh. 1) and also to the Staff BTP (Steele Aff. 1). The program employs standard methodology and its performance over the past ten years indicates that the size, frequency and distribution of samplings are in compliance and that exposure pathways are adequately monitored. It is tailored to the local meteorology, growing seasons, topography, population distribution and agricultural and human activities in the LACBWR area. (See also our discussion of contention 2A, pointing out that dose assessments from atmospheric and dispersion models take into account the effect of changes in topography.)

In response to discovery requests, CREC has failed to produce any factual basis for the contention that DPC's radiological environmental monitoring program is inadequate. CREC's claims to the contrary in its discovery responses are either irrelevant to the adequacy of DPC's monitoring program (*e.g.*, alleged deficiencies in the State of Wisconsin monitoring program) or unsupported allegations which do not raise any genuine issue of material fact. Furthermore, CREC failed to respond to both the Staff's and Applicant's motions for summary disposition and the affidavits included therein or to file a statement of facts to which it claims there is a genuine issue. Accordingly, the Board grants summary disposition of contention 8.

D. Contention 9 reads as follows:

9. CREC contends that the exposure of the population to the combined and synergistic health effects of the airborne effluents released by LACBWR and the Genoa 3 coal plant is inimical to public health and safety.

The starting point for this contention is, of course, the presence of the Genoa 3 coal-fired generating plant on the same site as the LACBWR facility. Apparently CREC is contending that airborne effluents from LACBWR and Genoa 3 somehow combine synergistically to produce harmful effects greater than the sum of the separate effects of the effluents from each plant.

In support of its synergism thesis, CREC, in responding to discovery, has referenced three scientific papers. The Staff has pointed out, however, that data on combined and synergistic health effects of airborne effluents from coal and nuclear power plants are essentially non-existent; that there are some experimental data and theoretical bases (such as the three articles in question) to suppose that the airborne effluents from Genoa 3 and LACBWR will interact; but that there is no

definitive data to show that such interaction “will have a synergistic effect on the distribution of radiation dose (and therefore health effects) among members of the public” (Gotchy Aff., pp. 1-2). The Staff’s affiant concludes that “the radiological and toxic impacts [of LACBWR and Genoa 3] would be additive and not synergistic, and would not be ‘inimical to public health and safety’ ” (*id.*, p. 4).

In its motion, the Applicant points out that LACBWR complies with all applicable regulations regarding protection of the public from radiation (FES, §§5.5, 10.4.1). In its Statement Of Material Facts As To Which There Is No Genuine Issue To Be Heard, the Applicant adds that Genoa 3 attains all applicable air quality standards adopted by the U.S. Environmental Protection Agency (1979 Annual Air Quality Monitoring Summary (Dairyland Power Cooperative)) and that the air quality standards issued pursuant to 40 CFR §81.350, which apply to Genoa 3, were developed in the presence of the background radiation from LACBWR.

Given the foregoing factual background, including the failure by CREC to demonstrate any credible basis for believing that any particular synergistic effects would occur at LACBWR and the lack of any response by CREC to the summary disposition motions, we agree with both the Applicant and Staff that the alleged synergistic effects, and their impact on public health and safety, are too remote and speculative to warrant consideration at an evidentiary hearing. More must be shown than that these effects are theoretically possible. See, *e.g.*, *Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-455, 7 NRC 41, 48 (1978). In our view, CREC’s showing does not satisfy these requirements. Summary disposition is therefore granted.

E. Contention 19 reads as follows:

CREC contends that the economic cost-benefit balance does not favor issuance of a full-term operating license due to LACBWR’s small size, relative obsolescence and retrofitting requirements; its low operating efficiency as evidenced by low megawatt hours of cumulative output, low unit capacity factor, and substantial downtime; the costs of spent fuel storage; the rising costs of fuel and maintenance; and the eventual costs of decommissioning.

The Applicant and Staff each claim that this contention involves only the economic consideration of the expense of the power produced by LACBWR and whether LACBWR is the most financially advantageous way for DPC to produce power. Hence, they assert, the contention is beyond the purview of both NRC’s authority and this proceeding. They cite the line of cases exemplified by *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-458, 7 NRC 155, 161-63 (1978); *Tennessee Valley Authority* (Hartsville Nuclear Plant, Units 1A, 2A, 1B, 2B), ALAB-367, 5 NRC 92, 102-03 (1977); *Illinois Power Co.* (Clinton

Power Station, Units 1 and 2), ALAB-340, 4 NRC 27, 48 (1976); and *Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-244, 8 AEC 857, 862 (1974).

That line of cases holds, in essence, that unless a nuclear plant has environmental disadvantages in comparison to reasonable alternatives, differences in financial cost do not enter into the NEPA process and, hence, into NRC's cost-benefit balance. Only after an environmentally superior alternative has been identified do economic considerations become relevant.

In our Second Prehearing Conference Order, dated July 8, 1980, we expressed our tentative conclusion that we would not dismiss Contention 19 on legal grounds. It was our view that CREC was seeking an alternative with differing environmental impacts than full-term operation of LACBWR — *i.e.*, plant shutdown, with the difference in supply made up by conservation and, to the extent necessary, power produced by other means (such as coal). *Cf.* LBP-80-2, *supra*, n.5, 11 NRC at 73-74, 80. Accordingly, financial costs could be an element in our consideration of those alternatives.

As elaborated in our discussion of Contention 22, *infra*, a new rule recently put into effect by the Commission precludes the consideration in an operating license proceeding of issues concerning alternative energy sources. 10 CFR §51.53(c). By virtue of this rule, we cannot consider whether conservation, together with such power as may be needed from other than nuclear sources, constitutes a preferable alternative to continued operation of LACBWR. All that remains of Contention 19 is the claim that the financial costs of LACBWR — including the particular costs listed in the contention, all of which are economic rather than environmental — tilt the cost-benefit balance against authorizing further operation of LACBWR. We agree with the Applicant and NRC Staff that, as so limited, the contention is barred by the cases cited earlier. We grant summary disposition on that basis.

F. Contention 22 reads as follows:

22. CREC contends that DPC has not sufficiently promoted energy conservation programs to decrease electrical demand, such as flat rate structure, higher peak usage rates, and elimination of electrical usage promotion, which would eliminate the need for LACBWR, as the least cost-effective unit in the DPC system.

Although this contention is stated in terms of DPC's alleged lack of adequate energy conservation programs, it essentially amounts to a challenge to the need for the power which LACBWR produces. As such, it represents a contention which may no longer be considered in a proceeding of this type.

On March 26, 1982, the Commission published in the *Federal Register* a final rule which amends 10 CFR Part 51 to provide that, for purposes of the National Environmental Policy Act (NEPA), need for power and alternative energy source

issues are not to be considered in operating license proceedings for nuclear power plants. 47 *Fed. Reg.* 12940. The rule became effective April 26, 1982 and applies to ongoing licensing proceedings such as this one.

When this rule was issued in proposed form, we invited the parties to comment on its potential effect (were it to be adopted) in this proceeding. Memorandum dated September 11, 1981 (unpublished). CREC did not respond. The Staff and Applicant, in filings dated October 5, 1981 (DPC's filing was corrected on October 7), each opined that the then proposed rule would preclude litigation of need for power and alternative energy source issues in this proceeding.

The Staff and Applicant each acknowledged an exception for "special circumstances," in accordance with the provision of 10 CFR §2.758. As an example of "special circumstances," the Applicant points to unusual or extraordinary environmental impacts of a particular facility, whereas the Staff suggests that the circumstance that LACBWR was never subject to a need-for-power review at the construction-permit stage might constitute a special circumstance. The Staff stresses, however, that a party wishing to invoke 10 CFR §2.758 must file an appropriate petition, and it notes that CREC had not then done so. (Although CREC might not have had an occasion to do so at that time, it still has not done so and has not filed any response to our inquiry which might suggest that it was planning to seek a special circumstances exemption from the new rule.)

The adopted rule is similar to the proposed rule in all respects pertinent to our evaluation of this contention. Moreover, insofar as we are aware, there are no unusual or extraordinary environmental impacts which have resulted from or will attend the operation of LACBWR. And the lack of a previous need-for-power review is not unique to this facility; rather, since it encompasses a number of reactors — including many of those subject to the SEP program — it does not appear to be the type of special circumstance to which the 10 CFR §2.758 procedures are directed. In any event, we are faced with no petition to invoke 10 CFR §2.758. That being so, we conclude that contention 22 should be dismissed on the basis of newly amended 10 CFR §51.53(c).

We further note that, in proposing the new rule, the Commission made the following statement (which it endorsed in the Statement of Considerations for the new rule):

In all cases to date, and in all foreseeable future cases, there will be some benefit in terms of either meeting increased energy needs or replacing older less economical generating capacity. Experience shows that completed plants are in fact used to their maximum availability for either purpose. Such facilities are not abandoned in favor of some other means of generating electricity.

46 *Fed. Reg.* 39440, 39441 (August 3, 1981), endorsed at 47 *Fed. Reg.* 12940, 12941, 12942 (March 26, 1982). The affidavits filed in support of the Applicant's summary disposition motion provide ample support for the proposition that

LACBWR is being used — and will continue to be used — as an integral part of DPC's system. (Chait Aff., ¶1; Steele Aff. 3, ¶2). The FES, as augmented by the Staff's affidavit, also indicates that DPC has and will continue to have a need for the power to be produced by LACBWR (FES, §§8.2.6 and 8.3; Feld Aff., pp. 3-4). See also our own decision in the spent fuel pool expansion proceeding, LBP-80-2, *supra*, n.5, 11 NRC at 77-100. Moreover, that decision, as well as the FES and one of the Staff's affidavits, demonstrate that LACBWR is more economical to operate than many of DPC's other facilities (*id.*, 11 NRC at 93-94; FES, §8.1; Nash Aff.). A major premise of the Commission in issuing the new rule thus appears to be borne out by the facts of this case.

Finally, both the Applicant and Staff indicate that CREC's assertions concerning DPC's alleged lack of an energy conservation program are not well founded (Thorson Aff.; Feld Aff., pp. 2-3). In these circumstances, given the lack of any response by CREC, we would have a sufficient basis for granting summary disposition of contention 22 even had the new rule not been put into effect.

IV. OTHER ENVIRONMENTAL QUESTIONS

Apart from CREC's contentions, several other environmental questions have entered into our consideration during the course of this proceeding. We discuss these matters here.

A. At the prehearing conference on June 19, 1980, we discussed with the parties the effect (if any) on this proceeding of a then newly enunciated interim policy statement of the Commission on the consideration of the likelihood and effects of serious (formerly "Class 9") accidents. See Second Prehearing Conference Order, dated July 8, 1980 (unpublished). Under the interim policy statement (which, we understand, is still in effect), it is clear that for proceedings of this type, which were ongoing at the time the policy statement was issued, "special circumstances" would have to be shown in order for the effects of those serious accidents to be included in our environmental review. 45 *Fed. Reg.* 40101 (June 13, 1980). At the conference, CREC advanced three different reasons which it claimed were "special circumstances." We deferred ruling on them at that time. Second Prehearing Conference Order, *supra*, p. 4.

We now conclude that none of the reasons advanced by CREC would constitute a special circumstance warranting our consideration of the effects of serious accidents in this proceeding. In its interim statement, the Commission equated the special circumstances which would invoke the application of the new policy to ongoing proceedings as comparable to the special circumstances which previously had caused the Commission to depart from its existing general practice (sanctioned by a proposed Annex to Appendix D of 10 CFR Part 50) of not considering the effects of serious accidents. Those circumstances were present where a reactor (such as the Clinch River Breeder Reactor Plant) was "very different" from more

conventional light water reactor plants for which the safety experience base is much broader, or where the environmental risk of some serious accidents warranted special consideration (as in the case of floating nuclear power plants).²⁸ The circumstances advanced by CREC are not comparable.

CREC first claimed that the existence of the liquefaction question which had been raised by the Staff in its show-cause order of February 25, 1980 indicated that the risk of a serious accident at LACBWR was greater than would normally be anticipated. In our February 24, 1981 Partial Initial Decision (LBP-81-31, *supra*), we found that liquefaction was not a problem for safety structures at the LACBWR site if the assumed safe shutdown earthquake (SSE) produced peak ground acceleration at the site of 0.12g or less. We left open the question of the size of the SSE and the peak ground acceleration which it would produce at the site. The January 28, 1982 affidavit submitted by the Staff takes the position that the peak ground acceleration at the site would be less than 0.12g. Although we have raised certain questions about this affidavit, we note that, should the peak acceleration at the site be found to exceed 0.12g, and if as a result liquefaction were found to be likely to affect safety structures in the event of an SSE, we would require that steps be taken — *e.g.*, dewatering — to preclude the occurrence of liquefaction under safety structures. That being so, we do not consider the liquefaction question as constituting a special circumstance which would cause us to consider the effects of serious accidents in this proceeding.

The other two “special circumstances” cited by CREC were the absence of a full-term operating license for this facility, and the fact that LACBWR is an older reactor assertedly of unique design. The fact that LACBWR (and a number of other reactors) are older reactors which operate under provisional operating licenses does not mean that they are necessarily less safe or have had a less thorough AEC or NRC review than reactors which have received full-term licenses. One of the purposes of this proceeding is to determine whether any changes to LACBWR’s operating authority are warranted. But the absence of a final determination on this question, or the mere fact that LACBWR was constructed at an earlier date under earlier standards, does not import greater risk to LACBWR’s current operation or create a special circumstance for examining the effects of serious accidents. Nor does LACBWR’s design, which is not so different from other boiling water reactors as to be comparable to the exceptions from the general rule earlier authorized by the Commission.

In short, CREC has not proffered any special circumstances which would warrant our applying the interim policy statement to an ongoing proceeding. We accordingly decline to do so.

²⁸ The Commission’s examples of special circumstances in connection with the interim policy statement appear to connote a somewhat different meaning to “special circumstances” than would attend the use of that term in conjunction with 10 CFR §2.758. See discussion at p. 528, *supra*.

B. During the second prehearing conference, we pointed out to the parties that the discussion of alternatives in the FES failed to include any consideration of the environmental impact of alternatives. Rather, the discussion was exclusively in terms of the economic costs of those alternatives. FES, §8.1 and Table 8.1-1. For that reason, the discussion of alternatives in the FES was inadequate under standards spelled out in decisions such as *Tennessee Valley Authority* (Hartsville Nuclear Plant, Units 1A, 2A, 1B, 2B), ALAB-367, 5 NRC 92, 102-105 (1977). We called upon the Staff and other parties to supplement the record in this regard (Tr. 1097-99; Second Prehearing Conference Order, *supra*, p. 5).

In response, the Staff, on August 29, 1980, provided copies of NUREG-0332 ("Health Effects Attributable To Coal and Nuclear Fuel Cycle Alternatives," draft dated September 1977) and an article appearing in the *Journal of the American Medical Association* entitled "Health Evaluation of Energy-Generating Sources." The Board has examined these articles and determined that, if the FES were supplemented by their addition, the governing standards for evaluation of alternative energy sources would be satisfied. In addition, these articles are not inconsistent with the conclusions with respect to the relative merit of various energy alternatives reached in the FES. FES, Summary and Conclusions, pp. i and ii, ¶¶4 and 7.

For the reasons discussed in conjunction with contentions 19 and 22, *supra* (i.e., the recently revised rules on the consideration of energy alternatives), it now is not necessary for an operating-license FES to treat energy alternatives. 10 CFR §§51.23(e), 51.26(a). However, as set forth above, the FES in this case already discusses those alternatives, albeit incorrectly (when judged by standards in effect at the time of the document's issuance). If the discussion of alternatives is to be used to favor issuance of the FTOL (as in the present FES), it must include elements requisite to such a discussion. Thus, the FES should be modified either to include the additional material on energy alternatives supplied by the Staff or, alternatively, at the discretion of the Staff, to delete any discussion of the cost or other aspects of those alternatives. We direct that the FES be so modified. 10 CFR §51.52(b)(3).

C. We have examined the responses to our questions concerning the FES and are satisfied with those responses. Where errors in the FES have been identified, we direct the Staff to take the necessary action to correct the FES. For example, see the Staff's response dated June 16, 1980, to our question 4 (Geckler Aff., p. 9).

V. ORDER

For the reasons stated, it is, this 2nd day of August, 1982

ORDERED

1. That the NRC Staff's and the Applicant's motions for summary disposition of environmental contentions are hereby *granted*; and

2. That the NRC Staff's Final Environmental Statement (NUREG-0191) be *modified* as provided in Parts IV.B and C of this Memorandum and Order.

In accordance with 10 CFR §§2.760, 2.762, 2.764, 2.785 and 2.786, this Memorandum and Order shall be effective immediately upon issuance and shall constitute the final action of the Commission on the matters considered herein forty-five (45) days after issuance, subject to any review pursuant to the above-cited Rules of Practice. (Because this proceeding will authorize no new operation but merely is considering the conversion of an existing provisional operating license to a full-term operating license, we do not regard the provisions of 10 CFR §2.764(f) as applicable.)

Exceptions to this Memorandum and Order may be filed by any party within ten (10) days after its service. A brief in support of the exceptions shall be filed within thirty (30) days thereafter (forty (40) days in the case of the NRC Staff). Within thirty (30) days of the filing and service of the brief of the appellant (forty (40) days in the case of the NRC Staff), any other party may file a brief in support of, or in opposition to, the exceptions.

**ATOMIC SAFETY AND
LICENSING BOARD**

**Charles Bechhoefer, Chairman
ADMINISTRATIVE JUDGE**

**Dr. George C. Anderson, Member
ADMINISTRATIVE JUDGE**

**Ralph S. Decker, Member
ADMINISTRATIVE JUDGE**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Marshall E. Miller, Chairman
Kenneth A. McCollom
Richard F. Cole

In the Matter of

Docket Nos. 50-445
50-446
(Application for
Operating License)

TEXAS UTILITIES GENERATING COMPANY, *et al.*
(Comanche Peak Steam Electric Station,
Units 1 and 2)

August 4, 1982

The Licensing Board orders the NRC Staff to show cause why sanctions should not be imposed for the Staff's refusal to obey a Board order to identify by name individuals interviewed in connection with an investigation and to provide unexpurgated copies of signed statements taken from them. The investigation concerned allegations by a former quality control inspector that he had been wrongfully discharged for reporting defects in construction which he had identified in the performance of his job and the investigation report had been introduced as an exhibit by the Staff.

RULES OF PRACTICE: INFORMER'S PRIVILEGE

A qualified informer's privilege exists in NRC practice only for informers who have been given promises and pledges of anonymity.

RULES OF PRACTICE: INFORMER'S PRIVILEGE

Informer's privilege must yield when, in the context of an ongoing hearing on safety issues, a Board needs the protected information to determine the credibility of witnesses on contested matters.

ORDER TO SHOW CAUSE

During a recent evidentiary hearing on a QA/QC contention, the NRC Staff introduced into evidence NRC Inspection Report 82-10/82-05 as Staff Exhibit 199.¹ That inspection report in pertinent part recited an allegation by a former QC inspector at Comanche Peak that he had been wrongfully fired or discharged because of his quality control inspections and reporting of defects in construction. The inspection report identified a number of opposing supervisory employees or officials of the Applicants or their constructor as Individuals B through K, but not by name.

The NRC investigator, Donald D. Driskill, testified that he interviewed all of these witnesses and took witness statements from many of them.² His stated conclusions were that the wrongful discharge allegation was "neither substantiated nor refuted." However, Mr. Driskill also concluded that the contrary assertions of the Applicants' officials and employees, that the firing was justified and not for improper QC reasons, were likewise "neither substantiated nor refuted." The Board directed Mr. Driskill and the Staff counsel to give the names of all letter-designated witnesses, and to produce the signed witness statements taken during this investigation. The Staff refused consistently to obey the Board's order to identify the witnesses.³ These witnesses were in fact identified by name by the Applicants' witness,⁴ and also by the informant Charles A. Atchison, whose own identity had been revealed by the Staff in the written direct testimony of Donald D. Driskill.⁵ The Staff also produced the witness statements, but all names and other information were heavily expurgated by black markings.⁶

For the reasons discussed *infra*, the NRC Staff is hereby Ordered To Show Cause why sanctions should not be imposed for its refusal to obey the Board's orders in this regard. The Staff shall have twenty (20) days from the date this Order is entered to show cause as directed. The other parties shall have ten (10) days after

¹ Tr. 2461, 2472, 2474-75 (July 27, 1982).

² Tr. 2609, 2612-15.

³ Tr. 2484, 2497, 2559-61, 3050-51, 3056.

⁴ Tr. 2508-2573.

⁵ Tr. 2519, 2564, 3059-60, 3063; Staff Exh. 197, pp. 2-8, 9.

⁶ Tr. 3041-42, 3159; Board Exh. 5A and B.

the Staff's filing in which to respond thereto if they so desire. The Staff shall then have an additional five (5) days in which to reply to any filed responses.

The Staff prefiled the written testimony of Robert G. Taylor and "Donald D. Driskill Regarding NRC Staff Investigation and Inspection Findings On Allegations By Charles Atchison."⁷ This testimony showed that Mr. Driskill as an NRC Region IV investigator conducted two investigations of allegations made by a former Brown and Root employee, Charles Atchison. The Staff filed its "investigative and inspection findings relating to allegations by Mr. Atchison, including the most recent allegations which are the subject of an NRC investigation report issued on July 7, 1982."⁸ The stated purpose of these investigations was to "assess the validity of these allegations and their impact on safety-related components and systems."⁹

Mr. Driskill interviewed persons who purportedly had some knowledge of the matters raised in the allegations. These persons were identified in Inspection Report 82-10/82-05, July 7, 1982 (Staff Exhibit 199) only as "Individuals A through K." These witnesses were interviewed regarding so-called Allegation No. 3, described as "Mr. Atchison stated that in late March, 1982 and early April, 1982 he submitted several NRC's which brought him into disfavor with site QA management and resulted in his termination."¹⁰

Mr. Driskill further testified that his investigation of the charge that Mr. Atchison as a QC inspector was fired for writing NRC's, "did not substantiate or refute the allegation."¹¹ This conclusion was based on the interviews with B through K, who were only identified as TUGCO or B&R QA or QC managers or supervisors. No facts were set forth concerning the credibility (or lack thereof) of these unidentified witnesses. Mr. Driskill testified that a complaint had been filed with the U.S. Department of Labor for Mr. Atchison's discharge alleging discrimination, and erroneously stated that "and a hearing is currently pending." In fact, the evidence shows that prior to that time on May 14, the Department of Labor Area Director found that the evidence showed that:

"As an employee working on the Comanche Peak Nuclear Project and especially as a quality control inspector, Mr. Atchison was performing his duties and his responsibilities by reporting possible non-conforming conditions on the job site. It clearly was his responsibility to report all non-conforming items even if they were not within his pipe whip restraint area. This letter will notify you that the following actions are required to abate the violation and provide appropriate relief:

⁷ Staff Exh. 197.

⁸ *Id.*, at 3.

⁹ *Id.*, at 8.

¹⁰ *Id.*, at 9.

¹¹ *Id.*, at 10-11.

1. Reinstatement to his position and pay at the Comanche Peak Project exactly as it existed before April 12, 1982.
2. Payment of all wages and benefits that he has lost. . . ."¹²

This ruling has been appealed by the employer, Brown & Root, to the Chief Administrative Law Judge of the Department of Labor. Mr. Driskill in his oral testimony stated that a Department of Labor official accompanied him when many of the "Individuals B-K" were interviewed and some witness statements were taken in what amounted to a joint investigation.¹³ The names of these witnesses were again refused to the Board, in spite of its order to both the investigator and Staff counsel to produce them.¹⁴

Mr. Driskill's Investigation Report (50-445/82-10; 50-446/82-05) signed June 30, 1982,¹⁵ was essentially the same as his testimony. His investigation "could not substantiate or refute the allegation" of wrongful firing of a QC inspector.¹⁶ Unnamed Individuals B-K were interviewed and partially quoted, but no information was given as to their credibility or identity. The report stated that Robert J. Fortman, assistant area director of the U.S. Department of Labor, "participated in interviews of pertinent CPSES employees on April 26, 1982, as reported herein, and has been provided with copies of all statements and documentary evidence pertinent to Individual A's complaint obtained during this NRC investigative effort."¹⁷ These witness statements were refused to the Board, except for censored copies which heavily expurgated all names and other material matters.¹⁸ A copy of such a "sanitized" witness statement will be appended hereto as Attachment 1.¹⁹ An unexpurgated copy of the same witness statement will also be appended as Attachment 2.²⁰

Most of the uncertainty as to the identities of the individuals interviewed was eliminated when Ronald G. Tolson, a high-ranking employee of the Applicants, testified to the identity of these alphabetical individuals.²¹ Mr. Tolson's identification of A through K was corroborated by the testimony of Mr. Atchison.²² These identifications are undenied on the present record. Mr. Driskill failed to reach conclusions as to the credibility of these individuals, even though their statements were often in substantial conflict.²³ Consequently, he neither "substantiated or

¹² CASE Exh. 650, pp. 59-61; *see also* Attachment #2 thereto.

¹³ Tr. 2559, 2570-72.

¹⁴ Tr. 2559-66.

¹⁵ Staff Exh. 199.

¹⁶ *Id.*, at 2.

¹⁷ *Id.*, at 9.

¹⁸ Tr. 3041, 3050-51.

¹⁹ Board Exh. 5A (unpublished but on file at the NRC Public Document Room).

²⁰ CASE Exh. 663 (unpublished but on file at the NRC Public Document Room).

²¹ Tr. 2509-13.

²² Tr. 3443-56.

²³ Tr. 2687-89.

refuted" Mr. Atchison's allegations. The Board, however, must reach conclusions on the serious charges that the Applicants discharged a quality control inspector because he was properly reporting nonconformances at the site. To do so, the Board must evaluate the credibility both of Mr. Atchison and the other individuals, including Mr. Driskill.

It is insufficient for the Board merely to be told that certain unknown informants provided information which does or does not support the allegation. The Board must be able to determine which information is reliable, and to do that it must evaluate the credibility of those who supplied the information. The identities of the unnamed individuals are necessary so that their credibility and that of Mr. Driskill may be weighed.²⁴

There may be a limited privilege for the identity of individuals who have expressly asked or been promised anonymity in coming forward with information concerning safety-related problems at a nuclear plant. Indeed, the Board repeatedly asked Mr. Driskill and the Staff whether any of the individuals had sought or been promised anonymity, and expressed its willingness to respect such requests if any had been made.²⁵ Apparently none of these alphabetical witnesses either sought or even wanted such secrecy.

Mr. Atchison, whose identity was gratuitously disclosed by the Staff in Mr. Driskill's prefiled written testimony, was the only individual who had requested anonymity.²⁶ The Staff would nevertheless impose anonymity on all the other individuals, even though they were noninformants who did not request secrecy and, for the most part, expressly waived any anonymity.

In a recent decision cited by the Staff, the Appeal Board repeatedly discussed the qualified informer's privilege only in the context of express promises and pledges of anonymity which had been made by the NRC. *Houston Lighting and Power Co.* (South Texas Project, Units 1 and 2), ALAB-639, 13 NRC 469, 471, 475, n.20, 476, 477, 478, n.26 (1981)). The importance of explicit pledges and promises of anonymity in that decision can be seen in the Appeal Board's statement that the "privilege to withhold the names of confidential informants is not absolute; it must yield where the informer's identity 'is relevant and helpful to the defense of an accused, or is essential to a fair determination of a cause.' " (*Id.*, at 473) Yet in the present case, we are faced with the anomalous situation where the only identity disclosed or confirmed by the Staff is that of an informant who had originally requested anonymity.²⁷ It is not clear that an informer's privilege could even be claimed by those officials and employees of the Applicants whom the investigator sought out to test a challenge of the execution of the QC program. They probably

²⁴ Tr. 2481, 2484, 2492, 2734, 3046-47, 3064-65.

²⁵ Tr. 2480, 2494, 2501-02.

²⁶ Tr. 2518-19.

²⁷ Tr. 2480, 2519.

had a duty to respond fully to such an official investigation without any claim to immunity. By contrast, the only individual who voluntarily went to the Staff with information (the classic definition of an informer) was Mr. Atchison.

The Board informed the Staff during the hearing, that even if the unnamed individuals had sought or been promised an informer's privilege, the privilege is not an absolute one.²⁸ The information must be disclosed when it is "essential to a fair determination of a cause." *South Texas*, 13 NRC at 473-74, quoting *Roviaro v. United States*, 353 U.S. 53, 60-61 (1957).

Unlike the *South Texas* situation or the instant Inspection Reports, this Board needs the ordered information in an ongoing hearing on safety issues, including the credibility of witnesses on relevant matters. In this context, there is a strong public policy favoring the disclosure of significant information in the absence of affirmative justification for nondisclosure. See Atomic Energy Act of 1954, as amended, §181, 5 U.S.C. 2231; 10 CFR §2.751; *Metropolitan Edison Co. (Three Mile Island Nuclear Station, Unit 1)* (ASLB November 6, 1981) (unpublished Memorandum and Order affirming special master's order on confidentiality). The Commission has stated that although it is sometimes necessary not to disclose various records underlying certain ACRS decisions, nevertheless "[a]t the same time, desiring to maximize public access to safety-related information wherever feasible, we have attempted to keep withheld material to a minimum."²⁹ The Commission accordingly held that the Licensing Board did not abuse its discretion in ordering the production of such documents where it found that the deleted information was necessary for a proper decision and was not reasonably obtainable elsewhere.

It is hornbook law that the underlying documentation may be required to be produced in order to test the validity of testimonial conclusions or opinions.³⁰ In the instant case, even if an informer's qualified privilege existed, it would fail in light of the Board's need for the particular information in informed decision-making.

For the foregoing reasons, the Staff is ordered to show cause why sanctions should not be imposed for its refusal to comply with the Board's orders regarding the disclosure of witness names and statements. The parties may also address if they desire what sanctions, if any, should be imposed under the principles announced by the Appeal Board in *Commonwealth Edison Company* (Byron Nuclear Power Station, Units 1 and 2), ALAB-678, 15 NRC 1400 (1982). The Staff shall have twenty (20) days in which to show cause as discussed above. The

²⁸ Tr. 2486, 2733.

²⁹ *Virginia Electric and Power Co. (North Anna Station, Units 1 and 2)*, CLI-74-16, 7 AEC 313, 314 (1974).

³⁰ *Tennessee Valley Authority (Hartsville Nuclear Plant, Units 1A, 2A, 1B and 2B)*, ALAB-463, 7 NRC 341, 355-56 (1978).

other parties shall have ten (10) days in which to respond if they so desire. The Staff shall have five (5) additional days to answer such responses.

IT IS SO ORDERED.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**Marshall E. Miller, Chairman
ADMINISTRATIVE JUDGE**

**Dated at Bethesda, Maryland,
August 4, 1982.**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Peter B. Bloch, Chairman
Dr. Oscar H. Paris
Mr. Frederick J. Shon**

In the Matter of

**Docket No. 50-155-OLA
(Spent Fuel Pool Amendment)**

**CONSUMERS POWER COMPANY
(Big Rock Point Plant)**

August 6, 1982

This is the first of a series of initial decisions concerning an amendment to permit 441 fuel assemblies to be stored in the spent fuel pool at Big Rock Point, compared to a current authorization for only 193 assemblies. This decision directs that certain changes be made in the emergency planning pamphlet that is distributed within the Emergency Planning Zone for the purpose of informing people about procedures to follow in case of an emergency at the nuclear plant. The decision also finds that there is as yet no adequate plan to distribute the pamphlet in public places or to inform transients, including large numbers of skiers and summer tourists, of appropriate steps to take in an emergency.

RULES OF PRACTICE: BURDEN OF PROOF (EMERGENCY PLANNING)

Applicant must demonstrate that a satisfactory prompt notification system is in place.

EMERGENCY PLANS: TRANSIENTS

A satisfactory emergency plan must provide an adequate opportunity for both the permanent and transient adult population to become aware of appropriate steps to take in an emergency.

EMERGENCY PLANS: PAMPHLET

The requirement that there be an emergency planning pamphlet is an intrinsic part of the regulatory scheme requiring a prompt notification system. Its purpose is to give residents and transients the information they need to respond to audible alarm systems and to be sufficiently knowledgeable to understand the importance of responding.

INITIAL DECISION

(Concerning the Following Emergency Planning Contentions: Adequacy of Emergency Planning Pamphlet's Treatment of Radiological Issues, and Adequacy of Distribution of Emergency Planning Pamphlet)

This is the first of a series of initial decisions (10 CFR §2.760(a)) addressing issues heard in Boyne Falls, Michigan on June 7 through June 12, 1982. The issues we decide today were selected for early determination in order to help to assure early, satisfactory distribution of an emergency planning pamphlet designed to inform citizens of procedures to follow in case of an emergency at the Big Rock Point Plant (Big Rock). Other issues will be treated separately, in ensuing decisions, in order to expedite the consideration of the case.

We have before us the application of Consumers Power Company (applicant) for a license amendment that would permit it to increase the capacity of the spent fuel pool that is located within the containment building of its Big Rock Point Nuclear Plant, which it has been operating since 1962. The amendment, if granted, would permit 441 fuel assemblies to be stored in the pool, compared to the currently permitted 193 assemblies.

The emergency planning contentions were admitted to this proceeding after the Board concluded that Christa-Maria's "plausible arguments concerning both the presence of an increased inventory of radioactive products and the mechanisms of dispersal" had not been answered by applicant, LBP-82-32, 15 NRC 874, 881 (1982). *See id.* at 880 (intervenors have argued that the fuel pool inventory could be dispersed by an air crash, a supercriticality incident initiated by a drop of a spent-fuel transfer cask, or a supercriticality incident resulting from a prolonged loss of fuel-pool cooling during a TMI-type incident). Under the circumstances,

the Board concluded that a contention concerning inadequacies in the emergency plan should be admitted in this licensing amendment proceeding. Although the events leading to dispersal of the fuel pool may be highly unlikely, emergency plans are intended to cope with just such unlikely events. *Id.* at 881.

I. THE CONTENTIONS AND APPLICABLE LAW

The relevant portions of Christa-Maria Contention 9(2) and 9(3), as admitted to this proceeding, state:

Consumers Power Company (applicant) should improve its public information pamphlet to more adequately inform people about radiation hazards, particularly to children and pregnant women.

Applicant's public information pamphlet has not been properly distributed and should be redistributed.

Id. at 885.

The relevant regulations and staff guidance documents are portions of 10 CFR Part 50 and NUREG-0654. Sections 50.54(q), 50.47(b)(5) and Appendix E to Part 50 are relevant to this proceeding. Section 50.54(q) applies the emergency planning regulations to operating power reactors. The other sections require that:

50.47(b)(5)[M]eans to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone [must be] . . . established.

* * *

50.54(s)(2)(ii) . . . In determining whether a shutdown or other enforcement action is appropriate, the Commission shall take into account, among other factors, whether the licensee can demonstrate to the Commission's satisfaction that the deficiencies in the plan are not significant for the plant in question, or that adequate interim compensating actions have been or will be taken promptly or that there are other compelling reasons for continued operation.

The following excerpts from Appendix E to Part 50 also are relevant:

D. Notification Procedures

* * *

2. Provisions shall be described for yearly dissemination to the public within the plume exposure pathway EPZ of basic emergency planning information, such as the methods and times required for public notification and the protective actions planned if an accident occurs, general information as to the nature and effects of radiation, and a listing of local broadcast stations that will be used for dissemination of information during an emergency. Signs or other measures shall also be used to disseminate to

any transient population within the plume exposure pathway EPZ appropriate information that would be helpful if an accident occurs.

In addition, NUREG-0654, which is cited in footnote 1 to Appendix E, contains the following guidance:

6. *Public Education and Information* [Evaluation Criterion 2., at 50:] The public information program shall provide the permanent and transient adult population within the plume exposure EPZ *an adequate opportunity to become aware of the information annually*. The programs should include provision for written material that is likely to be available in a residence during an emergency. Updated information shall be disseminated at least annually. Signs or other measures (*e.g.*, decals, posted notices or other means, placed in hotels, motels, gasoline stations and phone booths) shall also be used to disseminate to any transient population within the plume exposure pathway EPZ appropriate information that would be helpful if an emergency or accident occurs. Such notices should refer the transient to the telephone directory or other source of local emergency information and guide the visitor to appropriate radio and television frequencies.

* * *

APPENDIX 3, MEANS FOR PROVIDING PROMPT ALERTING AND NOTIFICATION OF RESPONSE ORGANIZATIONS AND THE POPULATION [beginning at p. 3-1]

NRC and FEMA recognize that the responsibility for activating the prompt notification system called for in this section is properly the responsibility of State and local governments. NRC and FEMA also recognize that *the responsibility for demonstrating that such a system is in place rests with the facility licensee*.

* * *

B. *Criteria for Acceptance* [2.] The minimum acceptable design objectives for coverage by the [prompt notification] system are: . . . (b) The initial notification system will assure direct coverage of essentially 100% of the population within 5 miles of the site. . . . Every year, or in conjunction with an exercise of the facility, FEMA, in cooperation with the utility operator, and/or the State and local governments will take a statistical sample of the residents of all areas within about ten miles to assess the public's ability to hear the alerting signal and their *awareness of the meaning of the prompt notification message as well as the availability of information on what to do in an emergency*. The system plan must include a

provision for *corrective measures* to provide reasonable assurance that coverage approaching the design objectives is maintained.
[Emphasis added.]

II. THE ADEQUACY OF THE PAMPHLET'S CONTENT

The parties have presented us with a variety of factual arguments that, regrettably, have not been fully discussed in relation to the applicable regulations and guidance. In this section of the decision, we set forth our views of the regulatory materials, then we set forth the factual arguments of the parties; only then do we resolve the factual disputes in light of our legal conclusions.

A. How the Regulatory Materials Apply

The requirement that there be an emergency planning pamphlet is an intrinsic part of the regulatory scheme requiring a prompt notification system. Its purpose is to give residents and transients the information they need to respond to audible alarm systems and to be sufficiently knowledgeable to understand the importance of responding.

The purpose of the pamphlet is to communicate necessary information. To do that, it must be clear, concise, and well-organized. It also must be properly distributed, so that the people who need the information will be likely to receive it. In the words of NUREG-0654, *supra*, it must give people "an adequate opportunity to become aware of the information annually."

While the writing and distribution of a pamphlet may seem a simple matter, effective writing and effective distribution are not so simple. The pamphlet is not to be judged aesthetically or academically, but by its ability to communicate and to inform.

One attribute of an effective pamphlet is accuracy. Important inaccuracies may become known and may detract from the credibility and the necessary acceptance of the pamphlet. On the other hand, a pamphlet cannot exhaustively treat the subject of the effects of radiation and it all-too-easily can become too elaborate and extensive to communicate effectively. If that were to occur, the pamphlet likely would go unread and its role as an action document would be defeated.

Our role is uncomfortable because it can easily be misunderstood or mischaracterized as that of censor. However, we view ourselves as responsible only for seeing that necessary facts about the rapid response system are communicated, that there are no serious errors detracting from the credibility of the document, and that there are no serious omissions from the distributed material. We are not censors, but limit our concern to matters that affect the document's ability to achieve its intended purpose. We also are aware that each proposed addition to the pamphlet

must be viewed with caution because additions may cumulatively increase its bulk and complexity and reduce its ability to communicate.

We take some comfort that the regulations require annual, methodologically sound (“a statistical sample”) sampling of people living and working in the vicinity of the plant, to determine if they are aware of the meaning of the prompt notification signal and if they have information available to them about what to do in a radiological emergency. In addition, corrective measures must be taken if the level of knowledge is substantially short of 100%, the level specified as an objective. This survey requirement, properly administered, can provide useful empirical information for improving the booklet’s ability to “get through” the intended information.

We note also that the regulatory materials require that signs or other measures be used so that transients can obtain appropriate information. Since the area of the Big Rock Plant has many summer and winter visitors, this requirement assumes increased importance.

In summary, the emergency planning pamphlet must be judged as an action document. The key questions are whether it has been written and distributed in compliance with the regulations, which were designed to facilitate an effective evacuation, should one be needed.

B. Overall View of the Pamphlet

To place intervenors’ views about particular portions of the pamphlet in context, we have read the entire pamphlet with care. Consumers Power Exhibit #5. This reading persuades us that the overall tone of the pamphlet is objective, that the level of language is direct and communicative, and that there are no glaring omissions or inaccuracies. We agree with applicant’s view that, after it makes the corrections that have been agreed to, the pamphlet will contain:

a balanced presentation of the following information: the sources of radiation and how radiation is measured; the presence and amount of background radiation from common sources, with illustrations; the effects of radiation on humans with specific attention given to the extra sensitivity of unborn and young children to radiation and the uncertain health effects of low-level radiation; a description of a postulated accident with the aid of a diagram of a nuclear power reactor containment building; the influence of weather on a radiation release; the effects of the dominant radioactive materials which would likely be released during an accident; and a glossary of basic nuclear terms.

[Footnote deleted.] Consumers Power Company Proposed Findings of Fact and Conclusions of Law on Subcontention (3) and that Portion of Subcontention (2) of Christa-Maria Contention 9 concerning the Emergency Planning Public Information Pamphlet (July 2, 1982) at 7 (Applicant’s Findings).

In general, this pamphlet seems to be a substantial improvement over the pamphlet that was originally distributed and criticized by intervenors. Consumers Power Exhibit #4.

C. Adequacy of Pamphlet as to Radiation Hazards

1. Changes Agreed to by Applicant

The most important change in the pamphlet agreed to by applicant is that information at the top of page 18 should be revised. As written, that section merely reassured Big Rock's neighbors that plausible accidents could lead only to minimal doses. Such an unmitigated reassurance might, however, have led people to disregard evacuation warnings. After all, why respond when no harm could come to one anyway? As a result of the Board's discussion with applicant's witness on this point (Tr. 1311-15), applicant has agreed to modify the section by adding the following language:

However, prudent emergency preparedness includes planning for less likely 'worst case' accidents in which larger, even life-threatening doses of radiation might be released within the five-mile EPZ.

Applicant's Motion to Supplement Findings of Fact and Conclusions of Law Out of Time (July 10, 1982) at 2. We find this change acceptable.

Applicant also has agreed that its pamphlet, adapted from one developed for the Palisades Nuclear Plant, should be modified in a number of ways in order to adapt it to the Big Rock situation. Hence, the containment building diagram in the pamphlet will be modified to reflect the actual structure of Big Rock Point, which does not have a concrete containment. Applicant's Findings at 10. Maps obviously will need to reflect, accurately, the local area. *Id.* at 5. Consumers Power's name, as publisher, will appear on the bottom of either page 1 or page 2 of the pamphlet. Applicant's Motion to Supplement at 2. (The glossary definition of the EPZ and of MPD should be made geographically and factually correct.)

A number of changes were made from the original pamphlet in order to reflect the special situation of women and unborn children. Applicant's Findings at 5. Because Christa-Maria argued that women of childbearing age might not always be aware of their pregnancy at the time of an accident, applicant also agreed to change page 17 of the pamphlet to read, "Women of childbearing age and women with very young children should be aware of the fact that, as compared with older children and adults, the unborn and very young children are especially sensitive to radiation." *Id.* Given the need for concise expression in the pamphlet, we believe that this change of wording is adequate to meet the point raised by Christa-Maria.

2. *Contested Allegations*

Christa-Maria has raised a number of questions concerning the adequacy of the emergency planning pamphlet that are not related to radiological questions. We have considered these allegations and have decided that they are not of sufficient importance for us to regard them as important safety issues that we would take up in our discretion by analogy to 10 CFR §2.760a. Consequently, we address only those questions relating to the admitted contentions. (Christa-Maria's suggested findings concerning the training of public officials are relevant to its contention and need not be refiled; they are not relevant to this expedited decision, but will be considered with respect to this contention in a subsequent decision.)

Christa-Maria argues that the emergency planning pamphlet has not been submitted to FEMA for review, implying that a review is required. However, Christa-Maria has not presented any basis for us to make completion of a formal FEMA review a requirement in this license amendment proceeding. FEMA reviews appear to be required only with respect to operating license proceedings. 10 CFR §50.47(a). For other proceedings, the Board need not obtain FEMA assistance in determining whether applicant has met the standards of 10 CFR §50.47(b).

Christa-Maria's proposed finding 22 states that, "The pamphlet should be simplified and elaborated upon." Intervenors Proposed Findings of Fact and Conclusions of Law on Christa-Maria contentions 9(2) and 9(3) (July 2, 1982) at 7 (Christa-Maria Findings). We find this statement to be too general and to be internally inconsistent.

Christa-Maria also has asked for an expanded treatment of the differences among alpha, beta, and gamma radiation. *Id.* Applicant responds that it has adequately treated the subject of sources of radiation on page 21 of the pamphlet. Consumers Power Exhibit #5. In general, we agree. However, there is a remote chance that additional, longer-lived radioactive elements could be dispersed by an air crash or in-plant explosion. To facilitate public response to such an event, the public should be informed that such releases are possible. The following changes are necessary to accommodate this point:

Add the word, "probably" in the seventh text line on p. 21, so that it will read, "Iodine-131 probably would. . . ."

Add two new sentences at the end of the "What kind . . ." section, reading: "It is very unlikely, but possible, that other radioactive materials might be released. If this occurred you would receive specific instructions about appropriate precautions."

Change the eighth line on p. 4 of the booklet to read, "*Unless you receive more specific directions, the best course . . .*"

We believe any further amplification of the text, or the inclusion of a diagram of the human body (including effects of radiation on different organs), as suggested

by Christa-Maria, would unduly complicate the pamphlet without providing information which would be helpful to public understanding of the need to evacuate, should that need arise. Although providing additional information about types of radiation might serve an important public-education goal, this Board's jurisdiction is limited to consideration of the pamphlet as an emergency preparedness document, and its treatment of radiation is entirely appropriate for that subject.

Christa-Maria's concern that people should immediately go inside when they hear an alarm (*see* Christa-Maria Findings at 8, ¶3) is consistent with applicant's own suggestions elsewhere in the pamphlet and would improve citizen response. Hence, the second paragraph under "Local Alert," on p. 5, should be changed to read, "If you hear any of these signals, go inside where you may either listen to a warning on the public address system or may tune to local radio or television stations listed on Page [] to learn what, if any, precautionary measures should be taken."

We do not consider the insertion of "routinely" on Figure 1, page 14, to be important enough for us to require a change, although applicant would be permitted to do so if it wished. The suggestion would change the title of the Figure from "Sources of radiation that people receive" to "Sources of radiation that people routinely receive." This has the theoretical advantage that two entries in the table, "Fallout" and "Release from the nuclear industry" are routine current releases and would be increased by further atmospheric nuclear tests (or large leaks from underground tests) or by large-scale nuclear power-plant accidents.

We reject Christa-Maria's suggestion concerning the parallel between solar radiation and ionizing radiation. The purpose of the section is to communicate the need to avoid excess exposure, just as you might avoid excess exposure to the sun. There is no need to clarify this further by pointing out the dangers of excess exposure to sun. That is not the subject of this pamphlet.

However, we accept in part Christa-Maria's objection to the paragraph on page 8 that compares releases from credible accidents to "the amount you could receive during some *routine* diagnostic nuclear medicine applications." The word *routine*, as used by applicant, includes "a rectilinear scan of the thyroid gland in which the patient is injected with iodine 131." Tr. 1312. We consider this to be somewhat misleading, however. Such a test would be routine for the medical community; but it is not routine for a patient. The word "routine" is more likely to connote a chest x-ray or dental x-ray, which are the routine tests with which people are most familiar. Hence, the word "routine" should be deleted.

It is not necessary for applicant to state that health effects are proportional to "cumulative radiation dose" rather than to "radiation dose." *See* Pamphlet at 18. No important ambiguity is presently involved. Similarly, page 21 discusses radioactive elements likely to be released. We are requiring applicant to add two

sentences to this page about the risk of dangerous releases; we see no reason also to require a discussion of the plant's radioactive materials inventory.

Christa-Maria's last recommendation is meritorious. We have decided that the section beginning, "What if I am instructed to evacuate?" (Pamphlet at 8) should begin with the sentence, "Since an accident's severity and the wind's direction determine the pattern of radiation releases during an emergency, radio, TV and public address systems will advise you whether to evacuate and what routes to take." This new sentence would help to communicate what appears to be an important purpose of this section of the pamphlet, to tell people a special reason to listen for emergency messages — that they may be in an area where they would be expected to evacuate because they are in a potentially dangerous area, downwind of the plant.

However, the addition of this one sentence does not entirely resolve this question. To carry out Christa-Maria's suggestion consistently, the section should read:

If you are within five miles of Big Rock, there is a remote possibility that you might be required to evacuate certain areas downwind from the plant. If you are asked to evacuate, first put on a dust mask or breathe through a damp handkerchief to filter out any dust in the air. Gather up a change of clothing, personal toilet articles, blankets or sleeping bags for each member of your family, special baby formulas and any special medications you or your family may need, as you would in preparation for a short trip, unless otherwise advised by local government.

Secure your property as if you were going on a short vacation. As you leave, lock all doors and tie a white handkerchief or piece of cloth on your mailbox or doorknob so that emergency response personnel will know you have evacuated. Get into your car or other vehicle, close the windows and vents and drive slowly and safely either to your Reception Center described on Page 9, or to the home of friends or relatives at least 15 miles from the Plant. If you have room in your car, take neighbors who have no means of transportation.

Evacuation, which is only a remote possibility, generally will be advisable only for the area within five miles from the plant, in an Emergency Planning Zone (EPZ) consisting of the following municipalities: in Van Buren County — Bangor, Covert, Geneva, Harford, and South Haven Townships and the Cities of South Haven and Bangor; in Berrien County — the Cities and Townships of Coloma and Watervliet, respectively, and Hagar Township; and in Allegan County — Casco Township.

We note that applicant plans to delete the pamphlet section, "Nuclear Plant Safety and Emergency Planning." Affidavit of Roger W. Sinderman, submitted July 10, 1982 at 2, ¶2E. This deletion has not been opposed and is acceptable. It

should contribute to the pamphlet's ability to communicate by eliminating irrelevant material.

III. ADEQUACY OF DISTRIBUTION OF PAMPHLET

A. Applicable Regulatory Materials

Review of the regulatory materials set forth in Part I, above, indicates that the NRC requires, as a condition to the issuance of an operating license, that an applicant demonstrate that "means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established." 10 CFR §50.47(b)(5). The plan must provide an adequate opportunity for both the permanent and transient adult populations to become aware of the information annually. NUREG-0654 at 50. Signs or other notices *shall* be used to inform transients of how they can become better informed about emergency planning information.

B. Analysis of Adequacy of Distribution

Much of the controversy about the distribution of the emergency planning pamphlet revolved around the distribution of an earlier version of the pamphlet. Consumers Power Exhibit #4. However, the new pamphlet will be distributed directly by the applicant and the alleged inadequacy of the prior distribution is therefore of no direct relevance to whether the new pamphlet will be properly distributed by the applicant. Tr. 1038, Loomis Testimony at 3-6. The deficiencies are, however, relevant to the adequacy of plans for the county Emergency Service Directors to distribute the pamphlet to public places such as motels, Chambers of Commerce and city and county buildings.

Christa-Maria has several objections to plans for distribution of the new pamphlet. Their first objection, which we consider wholly devoid of merit, is that applicants have not signed a written contract for the mailing they plan to make. There is no serious question about the availability of a local firm willing and able to contract for such a mailing.

Christa-Maria's principal concern, that transients may not learn what to do in an emergency, has merit. Although Mr. Danny B. Bement, who is an emergency management specialist for FEMA, presented somewhat vague testimony on the point, it appears that between 33% and 50% of the population within five miles of the plant is seasonal or transient. Tr. 835-838. The exact number of transients who rent quarters and who therefore would not receive a direct mailing is not clear from the record, but it is undoubtedly substantial.

Transients do not have an opportunity to become adequately informed about the emergency plan. Mr. Bement testified that generally emergency planning pamphlets were not distributed to guests in motels, in part because the motel owners fear that distributing pamphlets to the rooms might adversely affect business. Tr. 846. In a couple of motels in which booklets were placed in rooms, they were "picked up and carried out" or "were over time aged and discolored or no longer in useable form." Tr. 1010. Although there is some emergency planning information on the back inside cover of the telephone book in Charlevoix County, motel guests are not given any information that would direct them to that information in an emergency. Tr. 1010-1012, 1020-1021. Mr. Bement's testimony that people will naturally open a telephone book to the back inside cover is totally lacking in credibility. Tr. 1020-1021.

Mr. Bement suggested that, in an emergency, motel operators might be able to assure that motel guests would learn what to do. However, there is no testimony that these owners have specific action plans about how to accomplish that, that they have supplies of booklets available for distribution in an emergency, that guests could be expected to learn about the dangers of radiation rapidly enough to benefit from the motel owner's emergency action, or that a substantial percentage of the guests would be expected to be in their rooms, where they could be reached, when an emergency occurs. See Tr. 846.

We find that the distribution of the old pamphlet was a hit-or-miss proposition. About 60 to 75 percent of the pamphlets that were printed were not distributed. Testimony of Mr. Earl Muma, Charlevoix County Planning Director, Tr. 1361. Mr. Loomis said that about 9,000 pamphlets were returned, but we consider Mr. Muma's reference to numbers of boxes of pamphlets to be more tangible and credible. Cf. Tr. 1067-1068. The pamphlets were supposed to be distributed to homes by boy scouts, but Mr. Muma does not know how many boy scouts worked on the project or whether the pamphlets were distributed to houses. Tr. 1369, 1373. Although a map in Mr. Muma's office was marked to indicate progress on the distribution project, Mr. Muma does not know who marked the map. Tr. 1366. There apparently was no effort made by anyone to ascertain the extent of the deliveries made by the boy scouts. Mr. Bement, who works for FEMA, relied on Mr. Muma to find out whether the pamphlet was distributed. Tr. 840, 850.

We conclude, based on a reading of the entire record on this contention, that the local officials responsible for emergency planning and the Consumers Power officials who are responsible for assuring the NRC that an effective plan is in place, have worked conscientiously on tasks intended to fulfill individual requirements imposed by the regulations. However, whether because of lack of resources or lack of commitment, these officials have not developed information that would let them know whether the tasks they initiated have been effectively carried out. They were concerned that steps were taken to fulfill the requirement that a pamphlet be

distributed, but they did not find out how well those steps were carried out or whether the pamphlet was received.

Under these circumstances we have little confidence in the proposed method of distributing the new pamphlet to public places and to transients. Given the history of official concern about the effectiveness of emergency planning, we also were not overly surprised to discover that the details of the mailing to seasonal residents have not been thought through. Mr. Loomis, who is the Consumers Power official who will be responsible for pamphlet distribution, has arranged for a summer mailing to addressees on the "summer list," which reflects the largest seasonal population for the area. Tr. 1133, 1140-1141, 1150-1151. If the mailing were delayed until winter, the winter list would of course be used. Tr. 1151. But, as Christa-Maria has pointed out, "Distribution in the winter will not reach summer-only residents and in the summer will not reach winter-only residents." Christa-Maria Findings at 4, ¶13. Applicant, in its Reply at 5, recognizes the need to make this supplemental mailing to the seasonal residents who are not included in the first mailing. (Mr. Loomis, at Tr. 1150-1152, showed a partial appreciation of this need.)

Furthermore, there is no resolution of how transients should be informed about radiation hazards (a function of the pamphlet but not the telephone book) or about how to find emergency evacuation information on the inside back cover of the telephone book. We find that the regulations do not require distribution of the pamphlet to transients, but do require that "signs or other measures" be used to direct transients to appropriate information. (This contention was intended to address the distribution of information to transients and the failure to use "signs or other measures" therefore falls within the ambit of the admitted contention.)

Applicant must resolve the outstanding problems of distribution of the pamphlet and getting basic information to transients either by satisfying the Board's concerns or by demonstrating that adequate interim measures are being taken to resolve the open issues concerning distribution of the emergency planning pamphlet. *See* 10 CFR §50.54(s)(2)(ii) and §50.47(c)(1).

IV. MISCELLANEOUS MATTER

Through informal discussions sponsored by the Board, the parties have agreed that the emergency pamphlet should be modified by placing early warning information — including the meaning of the siren signal and a map of the evacuation routes — in a more prominent position at the beginning of the pamphlet. The Board is gratified that this matter was accomplished in a cooperative spirit. It does, however, have one further suggestion: that information about monthly siren testing should be included in this prominently placed material so that people may learn about these exercises in advance rather than becoming acclimated to sirens

and developing a habit of disregarding them. We expect that this suggestion will prove as acceptable to the parties as did our prior suggestion.

ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 6th day of August 1982

ORDERED

(1) Consumers Power Company's (applicant) Emergency Planning Pamphlet shall be modified from the draft contained in Exhibit 5 pursuant to this decision. Changes to be made include:

- (a) Each of the changes agreed to by applicant, as set forth in Section II.C.1. of this decision,
- (b) Changes indicated in Section II.C.2. of this decision, in order to indicate the possibility of release of radioactive elements not presently discussed in the text,
- (c) Alterations of the text labelled "Local Alert," as indicated in Section II.C.2. of this decision, to indicate the first action citizens should take when hearing an alert signal,
- (d) Deletion of the word "routine" from page 8 of the draft pamphlet, as indicated in Section II.C.2. of this decision, and
- (e) Editing indicated in Section I.C.2. of this decision, in order to more clearly state the reason evacuation plans may depend on wind direction.

(2) Applicant shall promptly distribute the revised emergency pamphlet pursuant to its plans, but a subsequent supplementary mailing should also be made to seasonal winter residents.

(3) Applicant shall promptly submit evidence demonstrating its compliance with regulatory principles governing the distribution of information to transients and to public places, as discussed in Section III.B. of this decision.

(4) Within ten (10) days after service of this decision, a party may appeal by the filing of exceptions to the decision or any part thereof, pursuant to the provisions of

10 CFR §2.762, which imposes requirements of conciseness and particularity and provides for the subsequent filing of appeal briefs.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE**

**Dr. Oscar H. Paris,
ADMINISTRATIVE JUDGE**

**Mr. Frederick J. Shon,
ADMINISTRATIVE JUDGE**

Bethesda, Maryland

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges

**James L. Kelley, Chairman
Dr. Cadet H. Hand, Jr.
Mrs. Elizabeth B. Johnson**

In the Matter of

**Docket Nos. 50-361-OL
50-362-OL**

**SOUTHERN CALIFORNIA EDISON COMPANY,
*et al.***

**(San Onofre Nuclear Generating
Station, Units 2 and 3)**

August 6, 1982

The Licensing Board decides that the utility of the further proceedings it had contemplated on the need for medical arrangements in the offsite emergency planning has been called into question by an Appeal Board ruling indicating that such arrangements are not necessary. The Board calls for comments from the parties on whether further proceedings may actually produce a better record on the question of need for medical services offsite.

MEMORANDUM AND ORDER

**(Concerning Whether Further Proceedings on the Adequacy of Offsite
Planning for Medical Services Should Be Conducted)**

Our Initial Decision of May 14, 1982 (LBP-82-39, 15 NRC 1163) concluded that the Applicants had not met their burden of proof on Contention 2D concerning arrangements for medical services in the offsite emergency plans. We further concluded, however, that the deficiencies in medical arrangements did not pre-

clude full power operations at this time, provided adequate remedial actions were completed within six months following issuance of a full power license. We retained jurisdiction over the adequacy of medical arrangements and provided that any party could request a further hearing on that question.

On July 16, 1982, the Commission issued an Order (CLI-82-14, 16 NRC 24) and the Appeal Board rendered a decision (ALAB-680, 16 NRC 127) bearing on the medical arrangements question. The Commission's Order announced completion of its "effectiveness" review pursuant to 10 CFR 2.764(f). The Commission allowed our January 11, 1982 Partial Initial Decision on seismic issues and our May 14, 1982 Initial Decision on emergency planning to go into effect, without prejudice to their subsequent appellate review. With regard to medical arrangements, the Commission noted that the license for Unit 2 would be —

. . . subject to the condition that for operation above 5% of rated power to continue beyond six months from the date of issuance of the full-power license, the offsite medical arrangements issue must be resolved or further operation above 5% of rated power must be justified under 10 CFR 50.47(c)(1).

The Commission also stated that —

The Commission will conduct an immediate effectiveness type review of the Licensing Board's decision on this issue pursuant to 10 CFR 2.764(f). The Board's subsequent order will be effective pending the Commission's review. The Licensing Board is to give the Commission a report on the status of the offsite medical arrangements question within four months of the date of issuance of the full-power operating license.

In ALAB-680, the Appeal Board denied a stay of our Initial Decision pending appeal, rejecting the contention, among others, that the Licensing Board should have required adequate offsite medical arrangements before any operations at full power, instead of allowing six months for remedial action. The Appeal Board concluded that a six-month grace period could be allowed, although the grounds they cited for that conclusion differed from ours. 16 NRC 138-39. The Appeal Board's conclusions on this aspect of the stay application were influenced by the narrow view it took of the obligation under 10 CFR 50.47(b)(12) to make medical services arrangements. Expressing "serious doubts" that this Board's broader reading of that rule is "accurate," the Appeal Board expressed its tentative opinion that the rule is only intended to protect people who have been both contaminated and physically injured on or near the site — such as a contaminated worker with a broken leg. The number of people in this category presumably would be small. *Id.* at 136-37. Under the Appeal Board's view, and contrary to our conclusions in the Initial Decision, there would be no requirement to make advance medical arrange-

ments for possibly much larger numbers of radiation victims among the offsite public.¹

These developments create an unusual situation. Before ALAB-680 came down, we had concluded that further proceedings (including a hearing, if requested) on the adequacy of offsite medical arrangements would be necessary. The Commission in its effectiveness review has given the green light to those proceedings, albeit without explicit endorsement of any particular scope of the medical arrangements requirement. Furthermore, all the Appeal Board did in ALAB-680, technically at least, was deny a stay based on tentative conclusions. Our holdings on the medical arrangements question have not been reversed, at least not yet. Thus we are presently authorized to commence further proceedings.

On the other hand, a realistic look at the Appeal Board's narrow interpretation of required medical arrangements makes us pause to consider whether further proceedings are likely to be worthwhile. There is, of course, at least the theoretical possibility that, upon review of our Initial Decision, further legal analysis or study of the record may lead the Appeal Board to a broader interpretation. As to legal analysis, we devoted some fourteen pages in our Initial Decision to the medical arrangements requirement. LBP-82-39, 15 NRC 1187-1200. The Appeal Board in ALAB-680 did not discuss the factors that we considered important.² Therefore, the possibility that the Appeal Board might change its mind later based on those same factors seems remote.

We propose to consider, however, in the light of submissions from the parties, whether further proceedings may produce a better evidentiary record on the need, if any, for medical services arrangements for the offsite public. As we noted in our Initial Decision, the evidence in the record on that need was "rather scanty." This was primarily because the Applicants' witness, Dr. Linnemann, testified against the existence of such a need, the Staff agreed without presenting any medical witnesses, and the testimony of the Intervenors' principal witness on the subject was excluded. Tr. 10,715-718. Such a record may afford an adequate basis for decision in the usual situation where an Applicant is seeking to demonstrate compliance with a rule of which at least the basic parameters are clear. Here,

¹ The Appeal Board's tentative view appeared to be based largely on its reading of a murky phrase in the rule — "contaminated injured individuals" — to mean that the same person had to be both contaminated and traumatically (physically) injured. We noted the ambiguity in the phrase at the hearing (Tr. 9636-37), but did not discuss the point separately in the Initial Decision. This Board's reading of the phrase was implicit in our Initial Decision — that it should be read disjunctively to include people who have been contaminated or injured.

² The Appeal Board has on many occasions reversed Licensing Board rulings because they were not accompanied by an adequate statement of reasons. See *Public Service Co. of New Hampshire, et al.* (Seabrook Station, Units 1 and 2), ALAB-422, 6 NRC 33, 41 (1977). As a corollary of the burden of explanation that rests on a Licensing Board, we believe that when an Appeal Board rejects a considered Licensing Board ruling, even on a stay application, it should explain why it finds the Licensing Board's reasoning deficient.

however, the rule is not well drafted and we face critical interpretative questions of first impression. As a result, the testimony of the expert witnesses must address not only compliance in this case, but also generic issues on the rule's basic scope. In such a situation, we believe that a more detailed and broadly-based record, possibly reflecting different viewpoints, would be beneficial, if one is available.

With these considerations in mind, the parties and FEMA (through the NRC Staff) are to respond to the following questions:

1. If further proceedings were directed, what additional evidence, if any, would you produce on the need for medical services arrangements offsite, beyond that recognized by the Appeal Board in ALAB-680? Describe briefly the thrust of that evidence and the qualifications of proposed expert witnesses.

2. Two witnesses, Drs. Linnemann and Ehling, testified that hospitalization was indicated for a person who has received a 150 to 200 rem whole body radiation dose. Tr. 7728, 9992. If that is so, and if it is prudent to assume that perhaps several hundred people offsite could receive such doses in a serious accident, then is it necessary, or at least prudent, to make advance arrangements for medical services for such people.³

3. If such arrangements were to be made, what would they consist of — beds, decontamination and testing facilities, specially trained personnel, special medicines, what else? Would it be possible to make the necessary arrangements on an *ad hoc* basis? If so, how long would that take?

4. In assessing the need for medical services, should one assume that the emergency plans for evacuation and sheltering will be effective (as suggested at 16 NRC 138 of ALAB-680) or ineffective (as suggested in the FEMA letter quoted at pp. 1193-94 of the Initial Decision (LBP-82-39)).

In addition, we pose the following legal and procedural questions:

1. Could further proceedings be conducted on the basis of affidavits and other written submissions, without a hearing?

2. Should the Licensing Board certify to the Appeal Board the question whether it should conduct any further proceedings and await an answer before doing so?

3. Question for FEMA only: Did the Board in its Initial Decision (at 1193-94) correctly state the FEMA position?

4. Please give us any further comments or suggestions you may have on how we should proceed in these circumstances.

The full power operating license for Unit 2 may be issued later this month. If that happens, this means that, pursuant to the license condition on medical services

³ In this connection we recognize that we are dealing with "emergency" services as opposed to long term treatment. But we do not equate the emergency concept with the prospect of imminent serious injury or death unless immediate medical services are administered. Even assuming that hospitalization would be largely precautionary in the case of a few plant workers receiving high radiation doses, similar precautionary measures might be taken where many more members of the general public are involved.

arrangements, that issue should be resolved in February, 1983, and an interim report must be made to the Commission in December, 1982. Should further proceedings, including a hearing, be decided upon, it will be necessary to move those proceedings along expeditiously. Accordingly, the responses of the parties and FEMA to this Order are to be served by September 3, 1982.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

James L. Kelley, Chairman
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,
this 6th day of August, 1982.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Louis J. Carter, Chairman
Dr. Oscar H. Paris
Frederick J. Shon**

In the Matter of

**Docket Nos. 50-247-SP
50-286-SP**

**CONSOLIDATED EDISON COMPANY
OF NEW YORK
(Indian Point, Unit No. 2)**

**POWER AUTHORITY OF THE STATE
OF NEW YORK
(Indian Point, Unit No. 3)**

August 9, 1982

The Licensing Board seeks further Commission guidance concerning the Commission's July 27, 1982 Memorandum and Order (CLI-82-15, 16 NRC 27) directing the Board to reconsider its rulings on contentions.

EVIDENCE: ACCIDENT RISK

The Licensing Board requests Commission guidance as to whether it should require that any proffered testimony on risk treat both the consequences and the probability of accidents; or whether it may admit testimony on consequences (or probability) alone if testimony on probability (or consequences) is received from some other source.

LICENSING BOARD: JURISDICTION

The Licensing Board requests Commission guidance as to whether it should continue to hear evidence on certain emergency planning questions posed by the Commission in light of the decision of the NRC Regional Administrator to require licensees pursuant to 10 CFR §50.54 to cure significant deficiencies in their emergency plans as identified by the Federal Emergency Management Agency.

MEMORANDUM AND CERTIFICATION (Seeking Further Commission Guidance)

In a Memorandum and Order issued July 27, 1982, the Commission directed this Board to reconsider "its rulings as to the admissibility of all the contentions admitted to the Special Proceeding." (CLI-82-15, 16 NRC 27, 37). The Commission's directive addressed our April 23, 1982, order formulating and admitting 22 contentions (including one Board question) based on 57 contentions that had been filed by intervenors.¹ Its concerns addressed three areas: (1) the admissibility of issues, (2) the applicability of 10 CFR §2.758 to contentions in this proceeding, and (3) the treatment of accident probability and consequences in testimony. Pursuant to the Commission's directive, the Board promptly began its reconsideration of the admitted contentions and its review of the bases proffered by the intervenors. Two important developments, however, now cause us to seek further guidance from the Commission.

1. Probability and Consequence Testimony

The first development arose in our reconsideration of the contentions and their bases. We have encountered an important problem relating to the Commission's directive that "[a]ny testimony on accident consequences for Indian Point must include a discussion of the probability of the accidents leading to the proposed consequences." (CLI-82-15, 16 NRC 36-37 (1982)). Our original interpretation of

¹ The 57 contentions from which we formulated 22 contentions to be litigated included only those intervenors' contentions which we deemed to focus adequately on the six Commission Questions set forth in Commission orders dated January 8, 1981, and September 18, 1981. *Consolidated Edison Co. of New York, Inc., et al.* (Indian Point, Units 2 and 3), CLI-81-1, 13 NRC 1 (1981) and (CLI-81-23, 14 NRC 610 (1981)). The intervenors' contentions which we deemed irrelevant and/or unimportant have not been discussed and enumerated by us; because the Commission directed us to formulate contentions after consulting with the parties, we did not consider it necessary to burden the record with a discussion of rejected contentions.

the instruction² was that this investigation, as a whole, should give approximately equal attention to the probability of occurrence of accidents and to the proposed consequences. We did not require that all testimony treat both the consequences and the probability of accidents because most witnesses, particularly those available to intervenors and local governments, do not have the interdisciplinary expertise required for analyzing *both* the probability of accidents and the consequences of accidents. The expertise that would be required for such testimony would encompass statistics, nuclear and/or mechanical engineering, meteorology, health physics, and traffic engineering. Such broad technical talent is usually available only to the most well-funded of parties.

A narrow reading of footnote 5 would preclude our hearing much of the testimony of intervenor, state, and county witnesses. If we reject this testimony we believe we will deny this Board and the Commission access to an important source of information about local conditions that could affect the consequences of an accident. We should not blind ourselves to relevant evidence simply because the party presenting it lacks the expertise to perform a probability analysis.

An example of the kind of testimony which a narrow interpretation of the instruction in footnote 5 would require us to reject is the testimony of Dr. Jan Beyea and Mr. Brian Palenik (Tr. 2900 ff.). That testimony was offered jointly by the New York State Attorney General, UCS/NYPPIRG, and the New York Audubon Society. Although offered with respect to Commission Questions 3 and 4 (Contentions 3.6 and 4.3), it arguably concerns consequences by virtue of the fact that it presents calculations of health effects that would result from accidents with evacuation proceeding according to plan. It does not address the probability of occurrence of the assumed accidents, although one of the witnesses offered some comment on the probabilities under cross-examination (Tr. 3248 ff.). At the hearing the Licensees moved to strike this testimony on the grounds that it did not deal with probability (Tr. 3306). We denied the motion because we believed that the Commission's instructions did not require each witness or panel of witnesses to give attention both to the probabilities of accidents as well as to their consequences. Moreover, the testimony of Beyea and Palenik, which withstood probing cross-examination, focuses squarely on the "individual risks" and "societal risks" about which the Commission expressed interest in its January 8, 1981, order. CLI-81-1, 13 NRC 1, 7.

In reconsidering the contentions and their bases pursuant to the Commission's July 27, 1982, directive, we find little mention of probability. Indeed, the stress in the bases is almost entirely on consequences, with no attention given to the

² The relevant instruction in n.5 said, "Attention shall be given both to the probability of occurrences of releases and to the environmental consequences of such releases." We thought the Commission meant that we should give attention to both factors, not that every witness should be required to do so. CLI-81-23, 14 NRC 610, n.5 at 612.

probability of specific accidents or the probability of effectiveness of countermeasures. If we are to admit only testimony which discusses both probability and consequences, the testimony, perforce, will consist almost entirely of that offered by the Licensees and the NRC Staff, a result that we do not believe the Commission intended. Therefore we seek Commission guidance by certifying the following questions:

- 1a. Must each witness's testimony address both consequences and probabilities, or must each party address both factors in its direct case?
- 1b. Alternatively, may we hear a combination of consequence and probability testimony taken from different sources, e.g., from the testimony of witnesses presented by different parties, or from cross-examination?³

2. Regional Administrator's Action on FEMA Findings

The second development which causes us to seek guidance is the action taken on August 3, 1982, by the Regional Administrator of NRC Region I in response to the issuance by the Federal Emergency Management Agency (FEMA) of its July 30, 1982, report, "Interim Findings on the Adequacy of Radiological Emergency Response Preparation of State and Local Governments at the Indian Point Nuclear Power Station." FEMA set forth in the report findings of significant deficiencies with respect to five of the planning standards of 10 CFR §50.47(b). As a result, the Regional Administrator started the "120-day clock" pursuant to 10 CFR §50.54(s)(2)(ii)⁴ and required Licensees to submit to the NRC within 30 days their plans for curing the deficiencies. Since Commission Questions 3 and 4 relate to the conformance of emergency plans with NRC/FEMA guidelines and to improvements in the emergency plans that can be expected in the near future, we certify to the Commission the following questions:

- 2a. Shall we continue to hear evidence on the "status and degree of conformance with NRC/FEMA guidelines" aspect of Question 3 and the "improvements in the level of emergency planning" and "time schedule" aspects of Commission Question 4?
- 2b. If we limit our proceeding to the "minimum hours warning" aspect of Question 3 and the "other specific offsite emergency procedures" aspect

³ See *Public Service Electric and Gas Co., et al.* (Hope Creek Generating Station, Units 1 and 2), LBP-78-15, 7 NRC 642, 674 ff. (1978), *aff'd*, ALAB-518, 9 NRC 14 (1979).

⁴ 50.54(s)(2)(ii) states in part as follows:

If after April 1, 1982, the NRC finds that the state of emergency preparedness does not provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency (including findings based on requirements of Appendix E, Section IV.D.3) and if the deficiencies (including deficiencies based on requirements of Appendix E, Section IV.D.3) are not corrected within four months of that finding, the Commission will determine whether the reactor shall be shut down until such deficiencies are remedied or whether other enforcement action is appropriate.

of Question 4, should we investigate those matters as they are now or as they are expected to be in four months?⁵

Finally, the Board wishes to advise the Commission and the parties that it will continue to review and reconsider the contentions pending receipt of the Commission's answers to the foregoing questions. Meanwhile, previously scheduled hearings, discovery, and filing dates are suspended.

THE ATOMIC SAFETY AND
LICENSING BOARD

Louis J. Carter, Chairman
ADMINISTRATIVE JUDGE

Oscar H. Paris
ADMINISTRATIVE JUDGE

Frederick J. Shon
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,
this 9th day of August, 1982.

⁵ The Commission's Questions 3 and 4 from its January 18, 1981, and September 18, 1981, orders read as follows:

3. What is the current status and degree of conformance with NRC/FEMA guidelines of state and local emergency planning within a 10-mile radius of the site and, of the extent that it is relevant to risks posed by the two plants, beyond a 10-mile radius? In this context, an effort should be made to establish what the minimum number of hours warning for an effective evacuation of a 10-mile quadrant at Indian Point would be. The FEMA position should be taken as a rebuttable presumption for this estimate.
4. What improvements in the level of emergency planning can be expected in the near future, and on what time schedule, and are there other specific offsite emergency procedures that are feasible and should be taken to protect the public?

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Robert M. Lazo, Chairman
Dr. Richard F. Cole
Dr. A. Dixon Callihan

In the Matter of

Docket Nos. STN-50-528-OL
STN-50-529-OL
STN-50-530-OL

ARIZONA PUBLIC SERVICE COMPANY, *et al.*
(Palo Verde Nuclear Generating Station,
Units 1, 2 and 3)

August 12, 1982

The Licensing Board issues a Memorandum and Order denying Intervenor's Petition for directed certification of two evidentiary rulings made during the operating license proceeding.

RULES OF PRACTICE: INTERLOCUTORY APPEALS

The availability of directed certification is an exception to the Commission's general rule against interlocutory appeals (10 CFR 2.730(f)) and, as such, is to be resorted to only in "exceptional circumstances." *Consumers Power Company* (Midland Plant, Units 1 and 2), ALAB-382, 5 NRC 603, 606 (1977).

RULES OF PRACTICE: INTERLOCUTORY APPEALS

The D.C. Circuit's opinion in *Natural Resources Defense Council v. NRC*, 685 F.2d 459 (D.C. Cir. 1982) does not affect this proceeding in such a manner as to present a "novel question of policy or law" under 10 CFR Part 2, Appendix A(V)(f)(4).

RULES OF PRACTICE: INTERLOCUTORY APPEALS

Intervenor's petition has not met the standard for discretionary interlocutory review set forth by the Appeal Board in *Public Service Company of Indiana, Inc.* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-405, 5 NRC 1190, 1192 (1977). Under this standard, review will be granted only where the ruling below either (1) threatens a party with immediate and serious irreparable impact which, as a practical matter, cannot be alleviated by a later appeal, or (2) affects the basic structure of the proceeding in a pervasive or unusual manner.

MEMORANDUM AND ORDER

(Denying Intervenor's Petition for Directed Certification Pursuant to 10 CFR 2.718(i))

On June 21, 1982, Intervenor, Patricia Lee Hourihan, petitioned the Licensing Board for directed certification, pursuant to 10 CFR 2.718(i), of two evidentiary rulings made during the operating license proceeding for Palo Verde Units 1, 2 and 3. The Board has determined that the Intervenor has not met the standards for directed certification as set forth in 10 CFR Part 2, App. A(V)(f)(4) and interpreted by the Appeal Board. Accordingly, Intervenor's petition for directed certification is denied.

BACKGROUND

Intervenor asks that the Licensing Board direct two questions for certification:

- 1) Whether the Licensing Board erred in refusing to admit evidence about the possible invalidity of Applicants' contract for effluent?
- 2) Whether the Licensing Board erred in refusing to admit evidence about the possible effects of the Pima-Maricopa Indian Community lawsuit on Applicants' contract for effluent?¹

On April 27, 1982, the Licensing Board made an oral ruling declining to examine the validity of the Applicants' contract for effluent. Tr. 346. The Board also denied the admissibility in this proceeding of the potential effects of the lawsuit filed by the Pima-Maricopa Indian Community against the Department of the Interior. *Id.* On May 14, 1982, Counsel for the Intervenor filed a motion asking the Board to reconsider its ruling. Following oral argument (Tr. 985-1012), the Board on May 26, 1982 made a brief oral ruling confirming the conclusions

¹ Intervenor's Petition for Directed Certification Pursuant to 10 CFR 2.781(i) at 8 (June 21, 1982).

reached in its earlier decision. Tr. 1269. A written Memorandum and Order explaining the Board's reasons for denying the motion followed.² Intervenor raises these issues again in her Petition for Directed Certification. She additionally objects to the Board's refusal to admit the testimony of Mr. John Leshy, a law professor at Arizona State University, with respect to the Secretary of the Interior's responsibilities over Federal reclamation waters, the proposed exchanges by the municipalities with the Indian tribes of effluent for potable water and the contracts for and allocations of Central Arizona Project water for the Salt River Valley.³ The Chairman had ruled that Mr. Leshy's testimony would amount to a legal opinion, which was not suitable as expert testimony in this proceeding. Tr. 1570.

Applicant and Staff, individually, filed answers to Intervenor's petition, asking the Licensing Board to deny the petition on the ground that Intervenor has not met the standards for directed certification under 10 CFR 2.718(i).⁴

DISCUSSION

The authority for an Atomic Safety and Licensing Board to certify questions to the Commission comes from 10 CFR 2.718(i), which states that the presiding officer has the power to:

. . . (i) Certify questions to the Commission for its determination, either in his discretion or on direction of the Commission.

The standard to be used in determining whether certification is appropriate is found in 10 CFR Part 2, App. A(V)(f)(4):

A question may be certified to the Commission or the Appeal Board, as appropriate, for determination when a major or novel question of policy, law or procedure is involved which cannot be resolved except by the Commission or by the Appeal Board and when a prompt and final decision of the questions is important for the protection of the public interest, or to avoid undue delay or serious prejudice to the interests of a party.

The availability of directed certification is an exception to the Commission's general rule against interlocutory appeals which appears at 10 CFR 2.730(f) and, as such, is to be resorted to only in "exceptional circumstances." *Consumers Power Company* (Midland Plant, Units 1 and 2), ALAB-382, 5 NRC 603, 606 (1977). The Appeal Board has emphasized that its directed certification authority "will be exercised most sparingly." *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-504, 8 NRC 406, 410 (1978).

² Memorandum and Order, LBP-82-45, 15 NRC 1527 (1982).

³ Intervenor's Petition at 5.

⁴ Applicants' Response to Intervenor's Petition for Directed Certification Pursuant to 10 CFR 2.718(i) (July 16, 1982); Staff's Answer to Intervenor's Petition for Directed Certification (July 15, 1982).

Almost without exception, the Appeal Board has undertaken discretionary interlocutory review only where the ruling below either (1) threatened the party adversely affected by it with immediate and serious irreparable impact which, as a practical matter, could not be alleviated by a later appeal or (2) affected the basic structure of the proceeding in a pervasive or unusual manner. *Public Service Company of Indiana, Inc.* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-405, 5 NRC 1190, 1192 (1977).⁵

Intervenor's request for directed certification does not meet these standards. Intervenor does not contend that a denial of certification would have an irreparable impact on the proceedings that could not be alleviated by an appeal. As the Staff points out,⁶ the record in this proceeding is closed. The effect on all parties of reopening the record to hear additional testimony would be virtually identical whether the record were to be reopened immediately or after appellate review were completed. The Appeal Board has specifically stated that it would not grant certification when "the most that can be said is that, if on review of the eventual initial decision we should conclude that the Board below was wrong, a new hearing might have to be ordered." *Toledo Edison Company and the Cleveland Electric Illuminating Co.* (Davis-Besse Nuclear Power Station, Unit 1), ALAB-314, 3 NRC at 99 (1976).

Intervenor contends that the Licensing Board's exclusion of testimony concerning the validity of the Applicants' contract for effluent affects the structure of the proceeding in a pervasive manner, thus satisfying the second *Marble Hill* criterion.⁷ Specifically, Intervenor objects to the Licensing Board's refusal to receive the testimony of Mr. Leshy and the Board's refusal to consider the effects of the lawsuit brought by the Pima-Maricopa Indian Community against the Department of the Interior on the validity of Applicants' contract for effluent. This testimony is crucial, Intervenor argues, to the determination of other issues in this proceeding regarding the availability of effluent for Palo Verde. *Id.* at 10.

The Appeal Board has stated that certification will not be granted, absent exceptional circumstances, on questions of what evidence is permissible. *Toledo Edison Company*, 3 NRC at 99. These matters are for the Licensing Board to

⁵ *Accord, Pennsylvania Power and Light Company and Allegheny Electric Cooperative, Inc.* (Susquehanna Steam Electric Station, Units 1 and 2), ALAB-641, 13 NRC 550, 551 (1981); *Houston Lighting and Power Company, et al.* (South Texas Project, Units 1 and 2), ALAB-637, 13 NRC 367, 370 (1981); *Houston Lighting and Power Company* (Allens Creek Nuclear Generating Station), ALAB-635, 13 NRC 309, 310 (1981); *Houston Lighting and Power Company* (South Texas Project, Units 1 and 2), ALAB-608, 12 NRC 168, 170 (1980); *Pennsylvania Power and Light Company and Allegheny Electric Cooperative, Inc.* (Susquehanna Steam Electric Station, Units 1 and 2), ALAB-593, 11 NRC 761, 762 (1980); *Public Service Electric and Gas Company* (Salem Nuclear Generating Station, Unit 1), ALAB-588, 11 NRC 533, 536 (1980); *Puget Sound Power and Light Company, et al.* (Skagit Nuclear Power Project, Units 1 and 2), ALAB-572, 10 NRC 693, 694 (1979); *Offshore Power Systems* (Floating Nuclear Power Plants), ALAB-517, 9 NRC 8, 11 (1979).

⁶ Staff's Answer at 4.

⁷ Intervenor's Petition at 10.

determine. This Board has stated the reasons why it has determined that admission of this testimony would not further the proceeding.

On May 27, 1982, the Chairman ruled from the bench that it did not consider Mr. Leshy to be an appropriate witness for this proceeding. Tr. 1570. Mr. Leshy is a professor of law, and was formerly an attorney at the Department of the Interior. The Board has determined that Mr. Leshy's testimony would constitute a legal argument, not a technical opinion. Expert testimony on the law is not relevant to this proceeding. Tr. 1568. As the Intervenor herself has pointed out, many witnesses have already testified in this proceeding about the cities' need for water, the ways in which the cities may be able to satisfy those needs, municipal exchanges of effluent with the Indians and the building of subregional wastewater treatment plants.⁸ Thus, the proposed scope of Mr. Leshy's testimony has been adequately covered. As the Staff notes, legal interpretations are properly presented in Intervenor's brief, rather than on the witness stand.⁹

Intervenor's contention that the Licensing Board's refusal to hear testimony on the Pima-Maricopa Indian lawsuit affects the structure of the proceeding in a pervasive manner is similarly without merit, as is the claim that this refusal presents "novel questions of policy and law" in light of the recent decision in *Natural Resources Defense Council v. Nuclear Regulatory Commission*, 685 F.2d 459 (D.C. Cir., 1982) (*NRDC v. NRC*). As the Board stated in its Memorandum and Order of June 4, 1982, setting forth its reasons for its refusal to admit this testimony, the Pima-Maricopa Indian lawsuit is currently being litigated in Federal District Court.¹⁰ It is not the job of this Licensing Board to second-guess the outcome of a pending lawsuit, as the Intervenor would have us do. Intervenor misinterprets the court's holding in *NRDC v. NRC* to prevent Licensing Boards from proceeding until all uncertainties are removed and every potential environmental effect is known. This interpretation, as both this Board and the Staff have pointed out, is clearly contrary to established principles of law.¹¹ The D.C. Circuit has adopted the 9th Circuit statement that NEPA cannot be "read as a requirement that *complete* information concerning the environmental impact of a project must be obtained before action may be taken. If we were to impose a requirement that an impact statement can never be prepared until *all* relevant environmental effects are known, it is doubtful that any project could ever be initiated." *Jicarilla Apache Tribe of Indians v. Morton*, 47 F.2d 1275, 1280 (9th Cir. 1973), *quoted in State of Alaska v. Andrus*, 580 F.2d 465, 473 (D.C. Cir.), *vacated, in part, sub nom., Western Oil and Gas Association v. Alaska*, 439 U.S. 922 (1978) (emphasis added by the D.C. Circuit). Thus, no "novel question of policy and law" is presented.

⁸ Intervenor's Petition at 10.

⁹ Staff Answer at 5.

¹⁰ Memorandum and Order, LBP-82-45, 15 NRC 1529 (1982).

¹¹ Memorandum and Order, LBP-82-45, 15 NRC 1530 (1982); Staff Answer at 7, 7n.6.

For the foregoing reasons and in consideration of the entire record in this matter,
it is this 12th day of August, 1982

ORDERED

That Intervenor's Petitions for Directed Certification Pursuant to 10 CFR
2.718(i), dated June 21, 1982, is *denied*.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**Robert M. Lazo, Chairman
ADMINISTRATIVE JUDGE**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Charles Bechhoefer, Chairman
Dr. Frederick P. Cowan
Dr. Jerry Harbour

In the Matter of

Docket Nos. 50-329-OM&OL
50-330-OM&OL

CONSUMERS POWER COMPANY
(Midland Plant, Units 1 and 2)

August 14, 1982

The Licensing Board issues a Prehearing Conference Order ruling on contentions submitted following issuance of the Staff's Safety Evaluation Report (SER) and Draft Environmental Statement (DES).

**RULES OF PRACTICE: NONTIMELY SUBMISSION OF
CONTENTIONS**

Where contentions are filed after 15 days prior to the special prehearing conference, those contentions are considered as late-filed and may be admitted only upon a balancing of all of the five factors listed in 10 CFR §2.714(a)(1). Where "good cause" for failure to file on time (factor 1) has not been demonstrated, a contention may still be accepted, but the burden of justifying acceptance of a late contention on the basis of the other factors is considerably greater.

**RULES OF PRACTICE: NONTIMELY SUBMISSION OF
CONTENTIONS**

Newly arising information has long been recognized as providing "good cause" for acceptance of a late contention. *Indiana and Michigan Electric Co.* (Donald C.

Cook Nuclear Plant, Units 1 and 2), CLI-72-75, 5 AEC 13, 14 (1972); *Cincinnati Gas and Electric Co., et al.* (William H. Zimmer Nuclear Station), LBP-80-14, 11 NRC 570, 574 (1980), *appeal dismissed*, ALAB-595, 11 NRC 860 (1980).

RULES OF PRACTICE: NONTIMELY SUBMISSION OF CONTENTIONS

Where nontimely contentions arise from the Three Mile Island Unit 2 accident, or the Commission's regulatory response to that accident, a Licensing Board must not only balance the factors in 10 CFR §2.714(a)(1) but also must take into account the Commission's December 18, 1980 Statement of Policy on that subject. CLI-80-42, 12 NRC 654.

RULES OF PRACTICE: NONTIMELY SUBMISSION OF CONTENTIONS

The proponent of a late-filed contention should affirmatively address the five factors in 10 CFR §2.714(a)(1) and demonstrate that, on balance, the contention should be admitted. In considering that showing, a Board may take into account the circumstance that a *pro se* intervenor is involved.

RULES OF PRACTICE: UNTIMELY INTERVENTION

Insofar as timeliness is concerned, the standards for evaluating the acceptability of late-filed contentions are the same as those for evaluating the admissibility of an untimely intervention petition — *i.e.*, the standards appearing in 10 CFR §2.714(a)(1).

RULES OF PRACTICE: UNTIMELY INTERVENTION

Dissatisfaction with the performance of another party (including the Staff) upon whom one had been relying cannot serve as an acceptable justification for an untimely intervention or for the late filing of a contention.

RULES OF PRACTICE: CONTENTION, ADMISSIBILITY OF

In considering the admissibility of contentions, a Licensing Board cannot resolve factual questions going to the merits of a contention. *Houston Lighting and Power Co.* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542, 547-49 (1980).

RULES OF PRACTICE: NONTIMELY SUBMISSION OF CONTENTIONS

It is unreasonable to expect an intervenor to examine reports of incidents at various reactors and file contentions based on them at a time when it is not known how or whether the lessons of that incident are incorporated into the reactor under consideration.

RULES OF PRACTICE: CONSIDERATION OF ISSUES INVOLVED IN RULEMAKING

When a matter is involved in rulemaking, the Commission may elect to require an issue which is part of that rulemaking to be heard as part of that rulemaking. Where it does not impose such a requirement, an issue is not barred from being considered in adjudications being conducted at that time. Furthermore, rulemaking does not preclude litigation of a contention questioning an applicant's compliance with an interim rule in effect during the pendency of the rulemaking proceeding.

NEPA: COST-BENEFIT ANALYSIS

"Sunk costs" are not appropriately considered in an operating license cost-benefit balance.

FINANCIAL QUALIFICATIONS: LITIGABILITY

Effective March 31, 1982, the Commission eliminated entirely requirements for financial qualifications review for, *inter alia*, electric utilities applying for operating licenses. This amendment is applicable to ongoing proceedings and requires dismissal of previously accepted financial qualifications contentions.

PREHEARING CONFERENCE ORDER
(Ruling upon New Contentions and Memorializing Other Determinations
Reached at Prehearing Conference)

On August 12-13, 1982, the Licensing Board conducted a prehearing conference in Midland, Michigan.¹ During the conference, we heard oral argument and ruled on various newly submitted contentions in the OL portion of this proceeding. We also announced several rulings respecting previously submitted contentions, and we discussed with the parties future schedules in the OL and OM proceedings. Following is a summary of these discussions and rulings.

I. NEW CONTENTIONS

A. Introduction

By our Special Prehearing Conference Order, dated February 23, 1979, we issued our first ruling on contentions in this operating license proceeding. We admitted three contentions submitted by Ms. Mary Sinclair and accepted 24 for discovery purposes, with the expectation that they would later be rewritten or withdrawn. We also admitted one contention submitted by Mr. Wendell H. Marshall (which was identical to one of Ms. Sinclair's contentions) and set forth criteria for the possible later acceptance of another of Mr. Marshall's contentions. Finally, we left open the opportunity for the filing of additional contentions based on new information in subsequently issued Staff documents, such as the Draft and Final Environmental Statements (DES, FES) and the Safety Evaluation Report (SER).

Our next ruling on contentions appeared in our Prehearing Conference Order dated October 24, 1980. There we accepted several soils-settlement contentions advanced by Ms. Barbara Stamiris or Ms. Sharon Warren² in the proceeding stemming from the December 6, 1979 Order Modifying Construction Permits (OM proceeding). Because the soils-related contentions advanced by Ms. Sinclair and Mr. Marshall in the OL proceeding involved some of the same factual circumstances as were raised by the accepted contentions in the OM proceeding, we granted the Applicant's motion to consolidate the OM proceeding with those

¹ The conference was tentatively scheduled in our Memorandum and Order (Reopening Record on QA Matters and Establishing Schedule for Prehearing Conference and Discovery) dated July 7, 1982 and was formally announced by a Notice of Prehearing Conference, dated July 28, 1982 (published at 47 *Fed. Reg.* 33574, August 3, 1982).

² Ms. Warren subsequently withdrew as an intervenor but made a limited appearance statement (Tr. 1026-1033).

issues relating to soil conditions and plant fill materials raised in the OL proceeding.

During a prehearing conference on April 27, 1981, the Board discussed with the parties the standards for raising contentions based on the accident at the Three Mile Island Unit 2 facility (TMI). In response to a Staff motion, we issued a Memorandum and Order dated June 12, 1981, which defined the conditions under which proposed new TMI-related contentions would be evaluated.

The Staff issued its DES in February, 1982 and its SER on May 11, 1982. (Subsequently, on July 13, 1982, the Staff served Supplement 1 to its SER on the Board and parties, and on July 30, 1982 it issued its FES.) Upon being advised of the imminent issuance of the SER, the Board conducted a telephone conference call on May 5, 1982 and established schedules for filing new or rewritten contentions, responses thereto and for further discovery. See Memorandum and Order dated May 7, 1982, as modified by our Memorandum and Order dated June 28, 1982 and further modified by our Memorandum and Order dated July 7, 1982.

On June 18, 1982, Ms. Sinclair submitted 12 new contentions and Ms. Stamiris submitted 29 new contentions. As a result of an NRC-Staff initiated telephone conference call on June 25, 1982 (see Memorandum and Order dated June 28, 1982), Ms. Sinclair and Ms. Stamiris each supplemented their filings with statements justifying the late filing of their new contentions. (Ms. Sinclair filed an undated document which we received on July 1, 1982. Ms. Stamiris' filing was dated July 9, 1982.) Ms. Stamiris also filed 21 revised and consolidated new contentions which, we understand, supersede the 29 contentions which she previously filed. On July 23, 1982, Ms. Sinclair filed two additional new contentions, and on August 3 and 6, 1982, respectively, she filed two more. At the prehearing conference, Ms. Sinclair presented a revised statement of her new contentions which withdrew 7 out of 16 of them and restated certain of the others. At the conference, Ms. Stamiris also revised her contentions and reduced their number to 7.

On July 26, 1982, the Applicant submitted responses to Ms. Sinclair's 12 new contentions filed on June 18, 1982 and to Ms. Stamiris' 21 new contentions.³ The Applicant opposed all of those contentions for one reason or another. On August 2, 1982, the Applicant responded to Ms. Sinclair's first two additional contentions; it opposed the admission of one of them and requested additional time (until the prehearing conference) to respond to the other. (We granted that request. Tr.

³ The Applicant's July 26, 1982 response to Ms. Sinclair's 12 new contentions was untimely — even counting time from the date (July 1) when we received Ms. Sinclair's statement of good cause (rather than from the date (June 18) when the contentions were filed). See 10 CFR §§2.714(c), 2.730(c). The Applicant's response provided no explanation for the untimeliness. When asked about this matter at the prehearing conference, the Applicant explained that it had read our Memorandum and Order of June 28, 1982 as permitting it to count time from the latest date (July 9) when Ms. Sinclair *could* have submitted her contentions (Tr. 8118). We agreed to accept the Applicant's response but also not to reject Ms. Sinclair's latest filings for timeliness reasons (Tr. 8120).

8126.) At the conference, the Applicant responded to all of Ms. Sinclair's revised new contentions. It opposed all except two of them.

The Staff filed responses to Ms. Sinclair's 12 contentions on July 21, 1982 and to Ms. Stamiris' contentions on July 28, 1982.⁴ It had no objection to the admission of two of Ms. Sinclair's and portions of two of Ms. Stamiris' new contentions. (Both of those contentions of Ms. Sinclair were later withdrawn (Tr. 8106).) It recommended that we defer action on another of Ms. Sinclair's contentions. At the prehearing conference, the Staff responded to all of Ms. Sinclair's revised contentions; it had no objection to three of them (subject to certain rewriting). The Staff also had no objection to another of Ms. Stamiris' contentions submitted at the prehearing conference.

At the prehearing conference we also inquired as to Ms. Sinclair's and Ms. Stamiris' responses to the points raised by the Applicant and NRC Staff, as well as to questions advanced by us. See *Houston Lighting and Power Co.* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-565, 10 NRC 521 (1979). For the reasons which follow, we admit six of Ms. Sinclair's new contentions and portions of three of Ms. Stamiris' contentions and reject the others.

B. Standards for Evaluating New Contentions

For contentions to be admissible in a proceeding such as this one, they must meet the requirements of 10 CFR §2.714(b). Specifically, they must have their bases set forth "with reasonable specificity." In addition, where (as here) the contentions are filed after 15 days prior to the special prehearing conference (which in this case was held in December, 1978), those contentions are considered as late-filed and may be admitted only upon a balancing of the five factors listed in 10 CFR §2.714(a)(1), viz:

- (i) Good cause, if any, for failure to file on time.
- (ii) The availability of other means whereby the petitioner's interest will be protected.
- (iii) The extent to which the petitioner's participation may reasonably be expected to assist in developing a sound record.
- (iv) The extent to which the petitioner's interest will be represented by existing parties.
- (v) The extent to which the petitioner's participation will broaden the issues or delay the proceeding.

See, e.g., *Houston Lighting and Power Co.* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-671, 15 NRC 508 (1982).

⁴ These responses were filed in accordance with the schedule requested by the Staff and approved by us during the telephone conference call on July 2, 1982. See Memorandum and Order dated July 7, 1982.

We interpret 10 CFR §§2.714(b) and (a)(1) as providing that, in balancing these factors, we must look at each one of them. Where “good cause” for failure to file on time (factor 1) has not been demonstrated, a contention may still be accepted, but the burden of justifying acceptance of a late contention on the basis of the other factors is considerably greater. *Nuclear Fuel Services, Inc. and New York State Atomic and Space Development Authority* (West Valley Reprocessing Plant), CLI-75-4, 1 NRC 273, 275 (1975). Conversely, a showing of good cause for lateness may nevertheless result in denial of a contention “where assessment of the other factors weighs against the petitioner.” *Id.*

For example, newly arising information has long been recognized as providing “good cause” for acceptance of a late contention. *Indiana and Michigan Electric Co.* (Donald C. Cook Nuclear Plant, Units 1 and 2), CLI-72-75, 5 AEC 13, 14 (1972); *Cincinnati Gas and Electric Co., et al.* (William H. Zimmer Nuclear Station), LBP-80-14, 11 NRC 570, 574 (1980), *appeal dismissed*, ALAB-595, 11 NRC 860 (1980). Nonetheless, before admitting a contention based on new information, we must balance the other factors, such as the intervenor’s ability to contribute to the record on the contention and the likelihood and effects of delay should the contention be admitted.⁵

In balancing these other factors, however, we are not required to give the same weight to each one of them. *South Carolina Electric and Gas Co., et al.* (Virgil C. Summer Nuclear Station, Unit 1), ALAB-642, 13 NRC 881, 895 (1981). We regard as highly important the intervenor’s ability to contribute to the development of a sound record on a particular contention. *Cincinnati Gas and Electric Co., et al.* (William H. Zimmer Nuclear Station), LBP-80-24, 12 NRC 231, 237 (1980); *accord, Portland General Electric Co., et al.* (Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610, 617 (1976). We also are giving significant weight to the potential delay, if any, which might ensue from admitting a particular contention. *Summer*, ALAB-642, *supra*, 13 NRC at 887-91. In that connection, with respect to those new contentions which we are approving, we are delivering this Order to the parties at the conclusion of the prehearing conference so that the 15-day period for filing discovery requests on those contentions (which we established by our Memorandum and Order of May 7, 1982, at p. 3) can begin to run at that time (obviating any delay resulting from service by mail).

⁵ One Licensing Board has recently taken the position that the five criteria for late-filed contentions are inappropriate for application to a contention that is “late” for reasons wholly beyond an intervenor’s control. *Duke Power Co., et al.* (Catawba Nuclear Station, Units 1 and 2), LBP-82-16, 15 NRC 566, 571-72 and n.6 (1982); *id.*, LBP-82-50, 15 NRC 1746 (1982). It has referred its ruling in that regard to the Appeal Board, which has not yet responded. While we recognize the forcefulness of the policy considerations advanced by the *Catawba* Licensing Board in support of that ruling, we believe that certain of the criteria — particularly the intervenor’s ability to contribute to the record — are meaningful at a late stage of a proceeding. In any event, pending further direction from the Appeal Board, we regard ourselves as bound by our reading of Commission rules as described in the body of this opinion, and accordingly we are balancing all five factors in ruling upon the new contentions before us.

In ruling upon contentions arising from the TMI accident, and the Commission's regulatory response to that accident, we also must take into account the Statement of Policy on that subject issued by the Commission on December 18, 1980. CLI-80-42, 12 NRC 654. There, the Commission described the extensive regulatory requirements being imposed on various facilities, and the extensive review effort by the NRC Staff which had been undertaken and was continuing, in response to the TMI event. The Policy Statement stressed that

where the time for filing contentions has expired in a given case, no new TMI-related contentions should be accepted absent a showing of good cause and balancing of the factors in 10 CFR 2.714(a)(1). *The Commission expects adherence to its regulations in this regard* [emphasis supplied]. 12 NRC 661.

To implement that Policy Statement in this proceeding, we issued an Order permitting intervenors to file TMI-related contentions based on information then available by July 31, 1981. Memorandum and Order dated June 12, 1981. No TMI contentions were filed by the specified date — or, indeed, prior to June 18, 1982. In ruling upon the TMI contentions which are now before us, we are giving substantial weight, in balancing the five factors, to the intervenors' failure to adhere to the filing requirements for such contentions which we established in our June 12, 1981 ruling. We note that Licensing and Appeal Boards have rejected TMI contentions as untimely even though they were filed long before the July 31, 1981 date which we established in this proceeding. *Zimmer*, LBP-80-24, *supra*, 12 NRC at 237 (contentions filed in July, 1980); *Summer*, ALAB-642, *supra*, 13 NRC at 884, 887 (contentions filed in March, 1981).

Finally, the proponent of a late contention should affirmatively address the five factors and demonstrate that, on balance, the contention should be admitted. *Duke Power Co.* (Perkins Nuclear Station, Units 1, 2 and 3), ALAB-615, 12 NRC 350, 352 (1980). In considering the statements filed by Ms. Stamiris, however, and the contentions themselves, we have taken account in our rulings of the circumstance that she is a *pro se* intervenor who is not represented by counsel.⁶ As the Appeal Board has stated, "although a totally deficient pleading may not be justified on the basis that it was prepared by a layman without the assistance of counsel, a *pro se* petitioner is not 'to be held to those standards of clarity and precision to which a lawyer might reasonably be expected to adhere.'" *Houston Lighting and Power Co.* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542, 546 (1980), quoting from *Public Service Electric and Gas Co.* (Salem Nuclear Generating Station, Units 1 and 2), ALAB-136, 6 AEC 487, 489 (1973). Ms. Sinclair and Ms. Stamiris each have some experience in NRC adjudicatory

⁶ Ms. Sinclair was represented by counsel at the prehearing conference. Her contentions submitted on June 12, July 23, and August 3 and 6, 1982 were filed *pro se*, although, to the extent not withdrawn, they were later rewritten and resubmitted.

proceedings. Nonetheless, we attempted during the prehearing conference to develop the substance of what the intervenors intended to assert in each proposed contention, as well as in their justifications for late filing, and the contribution which each might be expected to make in developing a sound record on each contention, so that we could understand the significance of the contentions and the statements apart from any technical legal deficiencies from which they might suffer. A fair balancing of the 10 CFR §2.714(a) factors requires no less!

We turn now to the specific new contentions advanced by Ms. Sinclair or Ms. Stamiris.⁷ Where we regard similar considerations as governing the disposition of more than one contention, we will deal with those contentions together.

C. Sinclair Contentions

1. *Sinclair contention 1*

This contention claims that the Applicant and Staff have failed to analyze the "absolute and incremental effects on the environment" of the nuclear fuel cycle. As its basis, Ms. Sinclair refers to the April 27, 1982 decision of the U.S. Court of Appeals in *Natural Resources Defense Council, Inc. v. NRC*, 685 F.2d 459 (D.C. Cir. 1982), in which the court found invalid certain portions of Table S-3, under which the Commission has evaluated the environmental impacts of the fuel cycle. Because of this recent decision, the Staff finds "good cause" for the late submission of this contention, and the Applicant does not question its timeliness. But they each question its acceptability on other grounds.

Ms. Sinclair submitted contentions raising similar fuel-cycle questions on a timely basis, early in this proceeding. See contentions 20 and 21 filed October 31, 1978. We rejected those contentions, primarily because they represented an impermissible challenge to the Commission's fuel cycle rule. Special Prehearing Conference Order, dated February 23, 1979, at p. 7. For that reason, we regard this new contention based on a recent decision invalidating in certain respects the fuel cycle rule, as being a reincarnation of the earlier contentions and, hence, timely. Balancing of the five factors is thus not required.

Nonetheless, as the Applicant points out, the recent Court decision is not yet final. At the prehearing conference, we were advised that the Court's mandate has not yet issued (Tr. 8166-67). Technically, therefore, Table S-3 remains in effect. Under these circumstances, we cannot accept contention 1 at this time, since it technically still constitutes an impermissible challenge to Table S-3.

⁷ Each contention is referred to by the number accorded it in the revised submissions presented at the prehearing conference. We will consider renumbering those new contentions which we are admitting, in order to avoid duplicate numbering of contentions.

Both the Applicant and NRC Staff opine that the Commission may in the near future issue a policy statement describing how, or whether, Table S-3 (or the Court's recent decision) should be factored into adjudicatory proceedings such as this one. The Staff recommends that we defer ruling on this contention, and we agree that that is the preferable course of action at this time. If the Commission's statement should permit litigation of questions such as are raised by contention 1, we will be prepared (at Ms. Sinclair's request) to consider that contention under the standards enunciated by the Commission. (If a request is made shortly after issuance of the Commission's statement, Ms. Sinclair will not have to demonstrate good cause for the untimely submission of such a contention.)

2. *Sinclair contention 2*

This contention was claimed to be a restatement of contention 3 which had been submitted by Ms. Sinclair on June 18, 1982, but we agree with the Staff and Applicant that it raised a new issue at the prehearing conference. That issue is failure to analyze operator error, as described in a Brookhaven Laboratory report (NUREG/CR-1979 (or 1879)), and was based on the theory that the accidents described and analyzed in Section 15 of the SER "assume no operator action for at least 15 minutes," and eventual long term proper operator action (SER p. 15-3). The Applicant asserted that it was a TMI-2 contention and therefore untimely, and further that it lacked basis on its face. The Staff objected to the contention as new and stated it had not had enough time to review it. We find that the contention lacks sufficient basis in that we were not given any reason for questioning the thoroughness or validity of the Staff's review of this TMI-2 issue, including description of the accident conditions. See SER, §15.

Balancing the five factors, we find no good cause for delay until August, 1982 in submitting a contention based on a January, 1981 report. Such a contention could have been submitted prior to the July, 1981 date we set for TMI-2 contentions. Moreover, we have been provided no basis whatsoever for determining whether Ms. Sinclair could make a meaningful contribution to the record on this quite technical question. Furthermore, given the endorsement of the comprehensiveness of the Staff's review of TMI-2 issues by the Commission in its June 1980 policy statement (see p. 578, *supra*), and absent any indication from Ms. Sinclair of why such review may be inadequate with respect to the subject matter of this contention, we have no basis for not concluding that in this respect Ms. Sinclair's interests are being adequately protected by the NRC Staff.

Finally, admission of this contention would clearly result in some delay. Although delay caused by actual litigation is not normally a significant ingredient of the balance we must make, we here take account of the Commission's reference in its Policy Statement to the lack of NRC resources to litigate every TMI-2 issue

and the absence of any reason for doing so given the comprehensive Staff review already undertaken or planned.

For the foregoing reasons, we reject Sinclair contention 2 as being untimely submitted.

3. *Sinclair contention 3*

This contention questions the adequacy of the analysis of severe accidents appearing in the DES (pp. 5-45 through 5-66), on the basis that it relies on the methodology of the Rasmussen Report (WASH — 1400) and fails to take into account a recent study (NUREG/CR/2497, June 1982) which assertedly demonstrates that the Rasmussen methodology understates the risk of such accidents by a factor of 20. Although set forth as a rewritten version of contention 5, submitted on June 18, 1982, we agree with the Applicant and Staff that the contention is a new one.

The Applicant did not question the timeliness of this contention but claimed that an adequate basis had not been set forth. In particular, it stressed the inaccuracy of the contention's claims, pointing out that the asserted uncertainty factor of 20 fell well within the uncertainty factor range of 10-to-100 given in the FES on page 5-48. We regard this position as essentially going to the merits of the contention. We cannot at this stage of the proceeding resolve the contention on this basis. *Allens Creek*, ALAB-590, *supra*, 11 NRC at 547-49.

For its part the Staff offered no objection to the timeliness of this contention, but it seeks additional time to respond to its substance. Normally, we would grant that request. But in view of the time constraints facing us and the parties in this proceeding, we have reluctantly elected to rule now on this contention.

We find this contention to have an adequate basis, set forth with sufficient particularity. Based on the publication of the June 1982 study, we find "good cause" for its late submission. We know of no other forum in which Ms. Sinclair can raise this contention and, since she is the only party asserting it, her interest will not adequately be represented by other parties. Admission of this contention at this time, under the discovery schedule we have already approved, will not significantly delay the proceeding. Finally, bringing the recent NUREG Report into the resolution of this issue will likely contribute to a sound record on this question. Based on all these considerations, we admit this contention.

We note, however, that the contention does not address the process of rebaselining to which the Staff refers in its DES, and how much this rebaselining and incorporation of better data and analytical techniques affects the risks estimated by the Rasmussen methodology. The contention does not compare the asserted increases in risk allegedly demonstrated by the NUREG study to the possible changes in risk calculations achieved through rebaselining and other improvements in data and analytical techniques, set forth in the DES at pp. 5-45 through

5-67. Although these factors bear on the merits of the contention and cannot be considered at this stage of the proceeding, we call the parties' attention to their possible relevance to final resolution of the issue raised by the contention.

4. *Sinclair contention 4*

This contention asserts that public safety is threatened by the absence, in the SER, of any limitation on the type of maintenance that can be performed *during plant operation*. The Intervenor claims that the contention is founded upon the NRC response to Interrogatory 15 (dated July 28, 1982) and, therefore, that it meets the "new information" criterion for showing good cause for admitting a late contention. Contention 4, here, is essentially identical to part of revised contention 36 submitted August 12, 1982, which also cites as its basis the Staff's response to Interrogatory 15.

Both the Staff and Applicant object to the contention on grounds of timeliness and lack of basis. They point out that the real source of the information underlying this contention is IE Information Notice 80-20, published May 8, 1980; that its title, *Loss of Decay Heat Removal Capability at Davis-Besse Unit 1 While in a Refueling Mode*, shows on its face that that plant was *shut down* while maintenance activity was being performed; and hence that the Information Notice does not pertain to maintenance activities while operating, the subject of the contention. Furthermore, they point out that limitation on activities during plant operation is covered by yet-to-be-developed Technical Specifications, which will become part of an Operating License. The Technical Specifications listed on page 16-1 of the SER are those that the Staff has thus far determined to be required for this particular facility.

We agree with the Staff and Applicant that Sinclair contention 4 lacks basis, inasmuch as the information relied upon bears no relationship to the subject of the contention. We need not rule, however, on whether the contention should have been submitted as early as 1980 (the date of the Information Notice) and, accordingly, whether "good cause" for late filing has been demonstrated. In our opinion, it is unreasonable to expect an intervenor to examine incidents at various reactors and file contentions based on them at a time when it is not known how or whether the lessons of that incident are incorporated into the reactor under consideration. Nonetheless, the other factors balance strongly against admission of this contention. Most important, the substance of this contention is encompassed in a portion of another restated contention of the same intervenor, which has been admitted to this proceeding for discovery purposes by our Special Prehearing Conference Order, dated February 23, 1979. This provides the availability of another means whereby Ms. Sinclair's interest in this matter will be considered, and it need not be considered twice. Dual consideration of the same topic would clearly lead to

unwarranted delay. Moreover, no additional contribution to a sound record could be expected if we were to admit this contention.

For all of these reasons, we reject Sinclair contention 4.

5. *Sinclair contention 5*

This contention claims that information concerning cooling pond performance and fogging and icing appearing at pp. 4-6 and 5-7 of the DES is derived from a climatic region of the country different from the Midwest and, hence, is not applicable to the Midland facility. It asserts that the DES should analyze information from the Dresden, Illinois nuclear facility (or a comparably sized and situated facility) so that NRC and the public can reach an "informed decision" on the adverse effects of the cooling pond.

The Applicant and Staff each assert that the contention is based on 1978 information and, accordingly, could have been submitted earlier. We disagree. The gist of the contention is not the fact that possible erroneous information had been developed but, rather, that the Staff used this information in its environmental analysis of the reactor. That circumstance could not have been predicted in 1978 or discovered prior to the issuance of the Staff's DES. For that reason, we find "good cause" for the late submission of this contention.

In opposing this contention, the Applicant also made certain claims going to the merits. We cannot resolve those claims at this stage. *Allens Creek*, ALAB-590, *supra*, 11 NRC at 547-49. In considering them, however, it became apparent to us that there was some confusion among the Applicant, Staff and Ms. Sinclair as to whether western cooling pond data were used in the development of Table 4.1 of the DES (which is the basis for some of the information referenced in this contention). We asked questions at the prehearing conference to clarify this confusion, but the parties were unable to reach agreement either as to what data were used in developing various conclusions reached in the DES or how those data were factored into the DES analysis. Since we cannot resolve disputes of this type at this stage of the proceeding, we have determined to admit this contention.

In doing so, we find that none of the 2.714(a) factors balance against such admission. One of Mr. Marshall's previously submitted contentions deals with a portion of the subject matter of this contention (fogging and icing); but, since Mr. Marshall has additional time to formulate this contention, we have not yet ruled on its admissibility. This contention should not result in any significant delay. Indeed, if the Applicant's claims as to use of data prove to be correct, the contention may well be a fit candidate for summary disposition pursuant to 10 CFR §2.749.

6. *Sinclair contentions 6, 8, 16*

Each of these contentions relates to the QA program insofar as it bears on the heating, ventilating and air conditioning (HVAC) system for the facility and the performance of the subcontractor responsible for that system (the Zack Co.). They are based on a recent (July 26, 1982) affidavit of a former employee of Zack and a report apparently submitted earlier this month to NRC by the Zack Co., pursuant to 10 CFR Part 21, and apparently represent new aspects of questions already being considered in the OM proceeding.

No party objects to contentions 8 and 16, or to the timeliness of contention 6. The Applicant objects to the specificity of contention 6; the Staff offers no objection to that contention, although it recognizes that, following discovery, it might be made more specific in certain respects. The Staff stresses the significance of the allegations and asserts that they should not be ignored in our consideration of QA matters.

We agree, and we admit all three contentions. All of the 10 CFR §2.714(a) factors favor their admittance. Although the litigation itself could cause some delay, the resolution of these questions is essential prior to any operation of this facility. Ms. Sinclair plans to present testimony of the ex-employee of Zack (and possibly others) and, in so proceeding, will clearly contribute to the development of a sound record.

We note that these contentions directly affect issues to be heard in the OM proceeding but also represent valid issues for the OL proceeding. We currently expect that they will be heard during our consideration of QA issues in the OM proceeding.

7. *Sinclair contention 7*

This contention alleges that the useful life of the plant will be considerably shortened as a result of the effects of low doses of radiation on polymer cable insulation and jacketing and the synergism effects of radiation and temperature. As a basis, it cites information appearing in the June, 1982 issue of *Industrial Research and Development*, which reported on a Sandia Laboratories study contained in a draft of NUREG/CR-2156, dated June, 1981.

The Staff offered no objection to this contention. The Applicant did not object to its timeliness, and it conceded that it may be relevant to equipment qualification testing. But it claimed we are barred from hearing this issue because equipment qualification methods including synergistic effects and aging are the subject of a current rulemaking. 47 *Fed. Reg.* 28363 (June 30, 1982).

We disagree with that conclusion. When a matter is involved in rulemaking, the Commission may elect to require an issue which is part of that rulemaking to be heard as part of that rulemaking. Where it does not impose such a requirement, an

issue is not barred from being considered in adjudications being conducted at that time.

The rulemaking notice in question makes no reference to the hearing of equipment qualification issues in licensing adjudications. That rulemaking was in fact initiated by the Commission decision in *Petition For Emergency and Remedial Action*, CLI-80-21, 11 NRC 707 (1980). There the Commission put into effect as an interim requirement more definitive criteria for environmental qualification of safety-related electrical equipment, set forth in certain DOR guidelines (November, 1979), NUREG-0588 (July, 1981), and Reg. Guide 1.89. 11 NRC at 711. It ordered that compliance dates for operating reactors be established through rulemaking. The Staff initiated such rulemaking in early 1982. 47 *Fed. Reg.* 2876 (January 20, 1982). Later, the Commission extended the compliance dates for operating reactors through the June 30, 1982 notice cited by the Applicant.

Thus, in our view, the rulemaking in question seeks to establish an implementation schedule and to codify the Commission's standards in this area, which were established on an interim basis by CLI-80-21. Even if rulemaking had the generic effect on adjudication ascribed to it by the Applicant, this rulemaking could not preclude litigation of a contention questioning an Applicant's compliance with the interim requirements.

We read contention 7 in that manner. We note that NUREG-0588 mandates that synergistic effects be taken into account (p. 15, item 4 (3); pp. II-43 to II-45), and that the contention asserts that as a result of the Sandia study, the effects of synergism have not been adequately taken into account. As so read, contention 7 is acceptably specific. We also find that it was submitted in a reasonably timely fashion and, absent its acceptance, may not be factored into the safety review of this facility. It now appears that Ms. Sinclair will be represented by counsel and that she will attempt to obtain expert assistance if possible. She is thus likely to assist in the development of a sound record. Nor, in view of its admission at this time, is any significant delay likely to ensue. We accordingly admit this contention. (In accepting this contention, we are deleting the first sentence which, we find, is relevant only to an earlier version of the contention.)

D. Stamiris Contentions

Barbara Stamiris has been admitted to the OM proceeding and, by virtue of the consolidation of the OM proceeding with issues in the OL proceeding relating to soil conditions and plant fill materials, she is recognized as a party in the OL proceeding to participate with respect to all matters relative to the soil settlement questions which are litigated in the OL proceeding. Prehearing Conference Order dated October 24, 1980, at p. 14. On March 28, 1982, Ms. Stamiris filed a petition for leave to intervene in the OL proceeding. As a result of her previous status as a

party for soil settlement questions, the Applicant and Staff treated her petition as one to expand her participation in the OL proceeding.

Whether we regard Ms. Stamiris as a late intervenor in the OL proceeding or as an existing intervenor with late-filed contentions (in the same sense as Ms. Sinclair's newly filed contentions), the standards for evaluating the acceptability of those contentions are the same — *i.e.*, those appearing in 10 CFR §2.714(a)(1). See 10 CFR §2.714(a)(3) and (b). We therefore will evaluate each of Ms. Stamiris' contentions under the same standards as those under which we have considered Ms. Sinclair's contentions.

Ms. Stamiris filed a more comprehensive statement of good cause for delay than did Ms. Sinclair, but it too is quite sparse in regard to certain of the factors. Although we must balance the factors with respect to each contention, some general observations are in order.

One of Ms. Stamiris' prime justifications for late intervention is her asserted disillusionment with the review undertaken by the Staff, as evidenced by the DES and SER. Whether or not justified — and we have serious doubts that it is — that reason cannot serve as an acceptable justification for late filing. A party or potential party cannot sit back and watch the performance of another party (including the Staff) and then, if dissatisfied, be granted the right to come in late or have late-filed contentions accepted. *Summer*, ALAB-642, *supra*, 13 NRC at 887, n.4; *Duke Power Co.* (Cherokee Nuclear Station, Units 1, 2 and 3), ALAB-440, 6 NRC 642, 644-45 (1977). Accordingly, we are giving no weight whatsoever to this reason for late filing.

We turn now to Ms. Stamiris' contentions.

1. Stamiris contention 1

This contention challenges the "economic cost benefit analysis" in the DES on four different grounds (examples a through d). (We are reviewing this contention in terms of the descriptions of examples a through d as submitted on July 9, 1982, as proposed contention 3.) The Staff offers no objection to example 1.b but opposes the others; the Applicant opposes the entire contention.

Example 1.a claims that the cost-benefit analysis fails to consider \$3.39 billion construction costs. As the Staff points out, however, those costs are considered at the construction permit stage, not the operating license stage of review. In a recent rulemaking (which ruled out consideration of need for power and alternative energy source issues in OL proceedings), the Commission noted that factors such as increased financial costs since the construction permit review should generally not be considered at the OL stage since such factors would be unlikely to tip the cost-benefit balance against issuing an operating license. 47 *Fed. Reg.* 12940, 12942 (March 26, 1982). Furthermore, as the Applicant points out, "sunk costs" are as a matter of law not appropriately considered in an operating license

cost-benefit balance. Cf. *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), CLI-77-8, 5 NRC 503, 534 (1977). ("Money spent is spent.")

Accordingly, we reject contention 1. a. Although we do not rely on the following considerations, we call Ms. Stamiris' attention to the Applicant's discussion of the merits of contention 1. a, which points out that Ms. Stamiris may well have misconstrued the effect on the cost-benefit balance if the \$3.39 billion in construction costs were factored into the analysis. We also note that the Applicant explained at the prehearing conference the manner in which construction costs were in fact accounted for in the environmental cost-benefit analysis at the OL stage of review (Tr. 8386-88, 8392).

Example 1. b questions the validity of the cost-benefit analysis on the basis of underestimation of decommissioning costs. As support, Ms. Stamiris cites sharply higher costs previously estimated by Consumers for the decommissioning of its Big Rock Point and Palisades facilities. The Staff offers no objection to our acceptance of this portion of contention 1; it points out that it did not question the timeliness of contention 1 because the contention stemmed from information in the DES.

The Applicant objects to the timeliness of this contention, claiming that the information both on its proposed decommissioning costs and the costs of Big Rock Point and Palisades was available as early as 1980 (Tr. 8405, 8409). We reject that claim. The gist of this contention is that the analysis in the DES is insufficient. The DES is a Staff document which may or may not rely on data submitted by the Applicant to perform its cost-benefit analysis. We agree with the Staff that the timeliness of this contention should be judged on the basis of availability of the DES (Tr. 8407).

The Applicant's other challenge to this portion of contention 1 is based on its differing interpretation of figures cited by Ms. Stamiris. We cannot resolve that dispute on a factual question at this stage of the proceeding. *Allens Creek*, ALAB-590, *supra*, 11 NRC at 547-49. Moreover, our preliminary review of the figures cited by the Applicant and Ms. Stamiris gives us some doubt as to the validity of any of them.

Balancing the five timeliness factors, we find that this contention is based on information in the recently issued DES and that there is therefore "good cause" for its late submission. We also find that there is no other forum in which the effect of decommissioning on the environmental cost-benefit balance (as distinguished from the cost of decommissioning for rate-making purposes) could be raised; since no other party has raised a comparable contention in this proceeding, Ms. Stamiris' interest in resolving this question will not adequately be represented by others. Based on her significant contribution to the record in the soils hearings, and the likelihood that differences in the decommissioning costs between the three Consumers facilities can likely be illuminated without extensive reliance on technical expertise, we believe that Ms. Stamiris will likely make a significant contribution

to a sound record on this matter. Indeed, litigation of the contention will at least permit us to have the apparent discrepancies in various figures clarified. Finally, we see no substantial delay resulting from admission of this contention. Discovery will have to be undertaken in accordance with the schedule we earlier approved and will commence upon issuance of this Order.

We balance the five factors in 10 CFR §2.714(a)(1) in favor of admitting the contention. Since we cannot give credit to the Applicant's assertions on the merits of the contention, we admit the contention.

Example 1.c alleges, on the basis of a statement in the SER, that because of a faulty circumferential weld on the reactor pressure vessel, the operating life of Unit 1 will be reduced, thereby invalidating the cost-benefit analysis required by NEPA. (The circumferential weld was also the subject of Sinclair contention 32, which was accepted for discovery purposes by our February 23, 1979 Special Prehearing Conference Order, and Sinclair contention 10, filed June 18, 1982, but dropped in favor of Stamiris contention 1.c during the prehearing conference.) Neither the Applicant nor Staff challenges the timeliness of this contention.

Both the Applicant and Staff point to additional information on the same page of the SER relied upon by Ms. Stamiris (p. C-10) which, they claim, demonstrates that Consumers is taking adequate steps to ensure operation of Unit 1 beyond the predicted 50 ft.-lb. end of life test of the weld. The Applicant, therefore, claims that the contention should be rejected for failure to state any reasonable basis, whereas the Staff merely states that a contention should not be admitted which recites a problem but ignores the solution to that problem which is set forth on the same page of the SER.

These responses cannot be credited for two reasons. First, they seek to have us decide disputed facts on the merits, a course of action which is impermissible at this stage of the proceeding. *Allens Creek*, ALAB-590, *supra*, 11 NRC at 547-49.

More important, however, as set forth in the FSAR (Section 5.3.3.8), the Applicant's proposed solution is based on techniques not yet developed. Also, the Applicant and Staff ignore the fact that the SER apparently gives two inconsistent values for the effective full power years (EFPY) predicted for this weldment (9 EFPY on p. 5-19 and "at least 15.1 EFPY" on p. C-10) before degradation to the 50 ft.-lb. Charpy test level is reached. Further, for unexplained reasons, adequate samples of this weld (WF 70) section were not available to meet requirements for surveillance testing, and discrepancies also exist (between the SER, p. 5-19, and the FSAR section 5.3.1.6.1.3) in the flux properties ascribed to the substitute surveillance sample (WF 209) and the actual beltline material (WF 70). Therefore, the record is insufficient for determining the correct end-of-life (EOL) value for this weldment for the purpose of a cost-benefit analysis, and possibly for meeting the requirements of Appendices G and H of 10 CFR Part 50.

Because this contention is founded upon information in the recently issued SER and represents a new aspect of information underlying a previously submitted

contention, and absent any timeliness objection by the Applicant or Staff, we find "good cause" for its late submission. Where "good cause" for a late filing is demonstrated (as here), the other factors are given lesser weight. We find, however, that admission of this contention will permit us to clarify the confusion in the record which now exists. Also Ms. Stamiris has no other effective means of obtaining resolution of this issue, either in this proceeding or elsewhere. No other party has had a contention admitted on this issue; Sinclair original contention 32 has thus far been accepted for discovery purposes only and, in any event, involves the safety rather than environmental aspects of this weld. Only through Ms. Stamiris' contention will the environmental aspects be litigated. Although admission of this contention could lead to some delay, that delay would not appear likely to be significant.

Balancing the factors of 10 CFR §2.714(a), we find that the balance strongly favors admission of example 1.c of this contention. We therefore admit it.

Example 1.d challenges the cost-benefit analysis on the basis of the allegedly erroneous rates of growth which it is said to rely on. Although advanced in terms of an ingredient of the cost-benefit analysis, need for power is what this contention is essentially contesting. As both the Applicant and Staff point out, litigation of such issues is precluded by 10 CFR §51.53, as recently amended. See 47 *Fed. Reg.* 12940 (March 26, 1982). We accordingly reject this contention.

2. *Stamiris contention 2*

Contention 2 asserts that CPC/NRC internal reporting systems, intended to allow plant workers to raise concerns or criticism about inadequate workmanship or practices, are ineffective because they have resulted in job losses due to QA/QC reporting (Dartey affidavit, June 1982; and Howard affidavit, 7-30-82). Moreover, this contention also asserts that paragraph 4 of the Bechtel "Employee Inventions and Secrecy Agreement" does not allow plant workers to provide information freely to the NRC, further frustrating these reporting systems.

In regard to the portion of this contention dealing with internal reporting systems, the Board notes that Sinclair contention 6 covers the QA deficiencies and other related problems reported in the Howard affidavit. Sinclair contention 6 has been admitted. The Board directs that the first part of Stamiris contention 2, including the references to both of the affidavits, shall be consolidated with Sinclair contention 6 and that Ms. Stamiris shall become a co-sponsor of that contention, assuming she wishes to do so.

In regard to the Bechtel secrecy agreement, both the Staff and Applicant are of the opinion that this was a form used to protect Bechtel's proprietary interests and was not intended to deter furnishing of information to NRC. Ms. Stamiris agreed that she had no specific knowledge that the Bechtel secrecy agreement had in fact been used to interfere with the flow of information to the NRC (Tr. 8430-31).

Hence we find no basis for the second part of Stamiris contention 2 and, accordingly, we reject it.

3. *Stamiris contention 3*

This contention asserts that extensive deficiencies in the procurement system for "proper qualification of equipment" has resulted in unresolved safety deficiencies concerning (1) bolting, (2) HVAC components, and (3) electrical components. It claims that these "EQ procurement deficiencies" are unresolved (SER §3.11) despite their identification in 1978.

The Applicant opposed this contention on the ground that it consisted of a conglomeration of old problems, without any indication of why Ms. Stamiris feels they are being mishandled, or why they are interrelated. The Staff opposes this contention as untimely, and lacking in basis and specificity.

We agree that, for all of these reasons, the contention cannot be accepted. The reference to "HVAC components" is founded upon the allegations contained in the Howard affidavit; we expect that those allegations will be considered by us in conjunction with Sinclair contention 6. The cited bolting problems arose in 1979-81. There is no showing why the corrective action with respect to reports 82-01 and 82-02 is not adequate; nor, indeed, why they even represent a procurement problem (Tr. 8447), and the EQ problems which are referenced in §3.11 of the SER are questions which, according to the SER, are being addressed in normal fashion by the Staff. The Staff stated that resolution of the latter problem would be included in an SER supplement (Tr. 8457).

4. *Stamiris contention 5*

In this contention Ms. Stamiris seeks to relate the effects of soils placement deficiencies upon the diesel generator building (DGB) to asserted reduction of diesel emergency generator reliability, and thereby to claim that "offsite/onsite blackout power failure accident," or station blackout, should be designated a design basis accident. She further alleges that the AFW system and a (steam) turbine driven pump used to supply emergency water from the non-category 1 condensate tanks, as described in the SER (pp. C-16-17), would not be adequate during station blackout caused by an earthquake. (Loss of all AC power for a limited time is also the subject of Sinclair contention 56 which was admitted for discovery purposes but dropped during this conference because of the presence of Stamiris contention 5. Tr. 8470-71. The Staff, however, would not object on grounds of timeliness if Ms. Sinclair wishes to restate and resubmit her contention. Tr. 8491.)

Discussion by all parties and the Board during the prehearing conference showed that two quite separate issues are embedded in this contention — *i.e.*, adequacy of the diesel generator *building* to withstand the safe shutdown earthquake (SSE), and station blackout. The effect of soils placement deficiencies and the adequacy of remedial actions to insure that the diesel generator building can withstand the SSE, and all other design basis events, have been and will be the subject of extensive consideration during the OM portion of this consolidated proceeding. The Applicant and Staff each claim that the two issues are impermissibly coupled. We agree. The coupling of alleged building failure with station blackout presumes the negative outcome of the not-yet-completed OM proceeding (an outcome which, on its own, would prevent issuance of an operating license, if not corrected). If the DGB cannot satisfy applicable seismic standards, the plant will not be permitted to operate.

Station blackout is a generic issue which is not at this time a design basis event. Tr. 8496. The Intervenor has not affirmatively shown any deficiency in the resolution of this issue as presented in the SER. Neither has she adequately shown the nexus required between this generic issue and this specific plant. *Gulf States Utilities Co. (River Bend Station, Units 1 and 2)*, ALAB-444, 6 NRC 760, 771-73 (1977). The alleged nexus, failure of the diesel generator building during an earthquake, would require occurrence of an earthquake larger than the design basis SSE and hence cannot serve as a basis for a litigable issue. See 10 CFR Part 100, Appendix A, Section V(a).

Therefore, we reject this contention on the grounds that the issue of seismic safety of the diesel generator building is already the subject of litigation in this proceeding, and for failure to establish any basis for considering the Staff's treatment in the SER of the station blackout issue at this particular site to be inadequate.

5. *Stamiris contention 6*

This contention alleges that the NRC risk assessment (a) is unconservative because lack of sufficiently complete knowledge of the characteristics of the "essentially impervious" clay layer (in the glacial till) casts doubt on its ability to provide a barrier to flow of contaminated groundwater, and (b) it does not consider potential effects of permanent dewatering on groundwater relationships. The contention concludes that because of these alleged shortcomings, public health and safety are jeopardized.

The Applicant did not oppose the contention on grounds of timeliness but pointed out that the DES risk assessment does contain an alternative that assumes that the clay layer is ineffective as a barrier, and environmental effects are still inconsequential (Tr. 8501, 8510); hence the basis for this portion of the contention

is incorrect on its face. The Applicant further was unable to ascertain the nature of Ms. Stamiris' concern about effects of permanent dewatering on groundwater relationships, and hence claimed that the second part of the contention lacked any basis whatsoever.

The Staff did not object to the timeliness of this contention but would reject the first part on the same grounds of lack of basis as the Applicant. On the other hand, the Staff had no objection to the second part, provided it was limited to the basis set forth in that example.

Based on her submittal in response to information in the DES, we find Ms. Stamiris had good cause for delay in filing this contention. While we agree with the Staff and Applicant as to the insufficient basis of the first portion of the contention, admission of the second part will contribute to the record on the potential effects of permanent dewatering over a period of decades. Also, Ms. Stamiris has no other means of obtaining resolution of this issue, either in this proceeding or elsewhere; no other party has raised this issue, and its admission at this stage of the proceeding would not lead to delay.

Balancing the factors of 10 CFR §2.714(a), we find that the balance favors admission of this contention but limited to the second part, so as to read as follows:

The NRC risk assessment in the DES does not consider potential effects of permanent dewatering on groundwater relationships.

6. *Stamiris contention 7*

This contention reads:

Reactor containment integrity is compromised by the combined effects of:

- a. RVP support modification (79-10)
- b. Lack of adequate shear reinforcement (81-06) which is uncorrectable
- c. Inadequate loading combinations (SER p. 3-21)
- d. Failure to postulate containment pipe break effects (SER 3.6.2)
- e. NSSS seismic/LOCA deficiencies (80-07)

and the interrelated effect of these unresolved safety issues is not addressed by the NRC in the SER.

The Staff objected to this contention as originally submitted (Stamiris contention 11, filed July 28, 1982) on the grounds that Ms. Stamiris failed to justify late filing and because of its reliance on references to reports which do not supply the particularity required. The Staff reiterated these objections during the prehearing conference (Tr. 8520-22).

The Applicant objected not only to timeliness but questioned the validity of the basis. The Applicant argued that Ms. Stamiris failed to show or define any

interconnection between the items other than that they were located in the containment structure. It added that all of the items were, in fact, resolved to the Staff's satisfaction (Tr. 8315-20).

Ms. Stamiris presented her reasons for not being satisfied with the resolution presented for each of the items but was unable to provide a basis for her lack of acceptance other than that they were reanalyzed or resolved through modification or by surveillance as part of the in-service inspection program (Tr. 8323-4).

We agree that the items cited in Stamiris contention 7 are not unresolved issues, and that the methods of resolution proposed are adequately documented in the SER. Ms. Stamiris has provided no reasonable basis for concluding that the issues have not been adequately resolved. Therefore, we reject this contention because it lacks the underlying basis necessary for admitting a contention.

7. Stamiris contention 8

This contention was first presented at the prehearing conference. It seeks an independent assessment of the plant's design adequacy and construction quality, as recommended in the June 8, 1982 interim report of the Advisory Committee on Reactor Safeguards (ACRS) (SER Supplement 1, Appendix G).

The Staff recommended that we accept this contention (Tr. 8532). The Applicant first expressed some reservations because it was uncertain whether the contention sought only the independent assessment or whether it additionally sought a review by this Board of such assessment (Tr. 8530). After the Board ascertained that Ms. Stamiris did not intend that the contention encompass a Board review of the assessment (Tr. 8534), the Applicant withdrew its objection and did not oppose our accepting the contention (Tr. 8534). It also noted that it had no objection to such an independent assessment (Tr. 8529, 8531) although, when pressed by the Staff, it declined to make any definitive commitment to institute such an assessment (Tr. 8531).

We find "good cause" for advancing this contention at this time, since it is based on a June, 1982 ACRS recommendation. The other factors also balance in favor of admitting this contention. There should be no delay as a result of this admittance since, if the Applicant institutes the independent assessment recommended by the ACRS, this contention would likely become moot. We accordingly admit this contention.

Because of certain assertions in the contention which, the Board is aware, are incorrect (and concerning which the parties were advised (Tr. 8525-26)), we have modified the contention to change the words "imposed by the ASLB in the Houston Power and Light, 50-498 and 50-499 OL proceeding, 4/30/82" to read "accepted by the Applicant in the Houston Power and Light (South Texas) OL proceeding."

II. RULINGS RESPECTING PREVIOUSLY SUBMITTED CONTENTIONS

1. *Original Sinclair contention 13*

One of the contentions of Ms. Sinclair which we accepted in our February 23, 1979 Special Prehearing Conference Order concerned the financial qualifications of Consumers Power Co. to operate the Midland facility (contention 13). Although the contention was litigable in 1979, the Commission recently amended its rules to eliminate entirely requirements for financial qualifications review for, *inter alia*, electric utilities applying for operating licenses. 47 *Fed. Reg.* 13750 (March 31, 1982). This amendment, which became effective immediately upon publication, is to be applied to ongoing proceedings such as this one, and to issues and contentions therein.

Accordingly, we ruled (*sua sponte*) at the prehearing conference that Ms. Sinclair's original contention 13 was being dismissed (Tr. 8144).

III. SCHEDULING

The Board issued the following scheduling orders:

1. In accordance with our Memorandum and Order of May 7, 1982, discovery on newly admitted contentions is to be initiated within 15 days of service of this order. We hand-served this order to parties' representatives on Saturday, August 14, 1982, but we ruled that the 15-day period is to commence on Monday, August 16, 1982.

2. The one exception to the above discovery period is with respect to Sinclair contentions 6, 8 and 16. We left open the discovery period on those contentions and agreed to hold a telephone conference call on Friday, August 20, 1982, to consider that question further.

3. We ruled that the next hearings on soils remedial measures will be held on October 5-8, 1982 and October 19-22, 1982. In connection with these hearings the Staff has committed to mail the supplement to the SER by August 27, and mail any prepared testimony on any items not contained in the SSER by September 24. The Applicant will review the SSER and mail comments and prepared testimony on it by September 24.

4. We granted the Staff's request that responses to the restated (earlier) contentions submitted by Ms. Sinclair at the prehearing conference be filed by September 3, 1982 (in the case of the Applicant) and September 10, 1982 (in the case of the Staff) (Tr. 8149-50).

ORDER

For the reasons set forth in this opinion, it is, this 14th day of August, 1982
ORDERED

1. That the following new contentions of Intervenor Mary P. Sinclair are hereby *admitted*: 3, 5, 6, 7, 8, 16.
2. That the following contentions submitted by Intervenor Barbara Stamiris are hereby *admitted*: 1.b, 1.c, 6 (in part), 8.
3. That previously accepted contention 13 of Ms. Sinclair is hereby *dismissed*.
4. That further schedules as set forth in Part III are hereby *adopted*.

THE ATOMIC SAFETY AND LICENSING BOARD

Charles Bechhoefer, Chairman
ADMINISTRATIVE JUDGE

Dr. Frederick P. Cowan
ADMINISTRATIVE JUDGE

Dr. Jerry Harbour
ADMINISTRATIVE JUDGE

Issued at Midland, Michigan.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Herbert Grossman, Chairman
Dr. Harry Foreman
Dr. George Ferguson

In the Matter of

Docket No. 50-70-SC
(Show Cause)

GENERAL ELECTRIC CO.
(Vallecitos Nuclear Center —
General Electric Test Reactor,
Operating License No. TR-1)

August 16, 1982

In this Show Cause proceeding to establish seismic and geologic design bases for the site and to determine whether the shutdown GE test reactor can withstand them, the Licensing Board majority issues an initial decision accepting the design bases proposed by licensee and NRC Staff, and authorizes a restart of the facility as structurally modified. In a separate opinion, the Board Chairman disagrees with the geologic design basis, questions some of the expert evidence offered at hearing, and would authorize a restart of the facility only with a further modification.

TECHNICAL ISSUES DISCUSSED

Ground faulting
Evidence of offsets
Estimates of surface offset
Probability of offset
Fault deflection

Ground motion
Peak accelerations
Effective peak acceleration
Combined with surface offset
Vertical accelerations
Structural capacity
Cantilever loading
Lack of containment integrity

APPEARANCES

For the Licensee

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For the Nuclear Regulatory Commission Staff

Richard G. Bachmann, Esq., and Daniel Swanson, Esq., Office of the Executive Legal Director, U.S. Nuclear Regulatory Commission

For the Intervenors

Glenn W. Cady, Esq., Carniato & Dodge; **Barbara Shockley; Glenn Barlow** (Technical Examiner)

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INITIAL DECISION

REMOVING SHOW CAUSE ORDER AND APPROVING RESTART

Majority Opinion by Dr. George Ferguson and Dr. Harry Foreman, Administrative Judges.¹

I. INTRODUCTION

The General Electric Test Reactor (GETR) is a 50 MW (thermal) test reactor used: a) in the production of radioisotopes for medical diagnosis and therapy, and for industrial purposes, and b) in the testing of reactor fuels and materials. The GETR is located at the General Electric Company's (GE) Vallecitos Nuclear Center near Pleasanton, California. GE (the Licensee) was issued Operating License No. TR-1 for the GETR on January 7, 1959. Order to Show Cause, October 24, 1977.

In July of 1977, during consideration of the Licensee's timely application for license renewal, the NRC Staff initiated a review of the geology and seismology of the Vallecitos site. In August of 1977, the NRC Staff met with GE and indicated that additional geological and seismological information would be required to support the renewal application. Subsequently, on August 22, 1977, the Staff received an advance copy of a United States Geological Survey (USGS) Open File Report, No. 77-689, and an accompanying geologic map which indicated that the trace of the Verona fault, previously mapped approximately one-half mile northeast of GETR, came within about 200 feet of GETR. *Id.* at 1-3.

Between October 10, 1977, and October 20, 1977, the Licensee dug two trenches (known as T-1 and T-2) in order to determine whether or not the Verona fault existed along its mapped trace at the site. An NRC Staff geologist and seismologist, and a representative of USGS visited the site on October 22, 1977, to observe and evaluate the geologic evidence in the trenches. On the basis of this observation and evaluation, the Staff concluded that there was evidence of a fault, and that it might be "capable," as that term is used in 10 CFR Part 100. *Ibid.*

The NRC Staff also concluded initially that vibratory ground motion at the site would likely be controlled by movement on either the Verona fault or on the nearby Calaveras fault, or on both. The Staff indicated that the most severe earthquake associated with the Calaveras fault would be in the magnitude range of 7 to 7.5, while an earthquake of lesser magnitude, perhaps 6 to 6.5, would be associated with the Verona fault. Of particular significance to the Staff were the possibilities that: a) an earthquake of this magnitude on the Verona fault would be expected to produce offsets of the ground surface of several feet; while b) ground motions at

¹ Separate Opinion of Administrative Judge Herbert Grossman, Chairman, dissenting in part and concurring in part, follows the majority opinion.

the site could have accelerations of sustained duration in excess of 0.75g. On this basis the Staff concluded that, since the facility had not been designed to withstand these severe earthquake effects, a potentially hazardous condition may exist. Accordingly, on October 27, 1977, the Acting Director of the Office of Nuclear Reactor Regulation issued an Order to Show Cause which required: 1) that the facility be placed in a cold shutdown condition upon completion of the then existing fuel cycle on October 27, 1977, pending further order of the Commission; and 2) GE to show cause why suspension of activities under Operating Licensing No. TR-1 should not be continued. *Id.* at 3-6, 8.

The Order to Show Cause provided that within 20 days the Licensee might file a written answer to the Order, and the Licensee or any interested party might request a hearing. On November 11, 1977, the Licensee filed a timely written answer and requested approval to resume operations immediately upon completion of certain modifications proposed in the answer.

In a Memorandum and Order dated February 13, 1978, the Commission, pursuant to Section 191 of the Atomic Energy Act of 1954, as amended (42 U.S.C. §2241), delegated the authority to rule on the requests for a hearing to an Atomic Safety and Licensing Board (Licensing Board or Board). In its Memorandum and Order, the Commission stated the issues on which a hearing might be held, as follows:

- ISSUE (1) What the proper seismic and geologic design bases for the GETR facility should be;
- ISSUE (2) Whether the design of GETR structures, systems and components important to safety requires modification considering the seismic design bases determined in issue (1) above, and if so, whether any modification(s) can be made so that GETR structures, systems and components important to safety can remain functional in light of the design bases determined in issue (1) above;
- ISSUE (3) Whether activities under Operating License No. TR-1 should continue to be suspended pending resolution of the foregoing.

Thereafter, GE submitted additional information to the NRC Staff relating to the geological characteristics of the site. It recommended geologic and seismic design bases, and submitted an analysis to demonstrate that the facility, after modification, would meet those design bases. Upon review by the NRC Staff, GE was advised in the summer of 1978 to perform additional geologic investigations. In response, GE undertook an extensive program of geologic investigations between August and December 1978. In February of 1979, GE submitted a detailed report on these investigations, along with additional information concerning the ability of

the GETR to meet the recommended seismic design bases. See Lic. Ex. 1 at 18-34; Lic. Ex. 6; Lic. Exs. 22-23.²

On September 27, 1979, the NRC Staff reached the preliminary conclusion that a surface displacement of 2½ meters could occur beneath the GETR. Since this was in excess of the 1 meter surface displacement to which the modified GETR facility had been analyzed by GE, and since the Staff indicated that they were not aware of any structure which had been analyzed or built for this type of seismic loading, the Staff advised GE that it did not intend to continue its review of the GETR. Stf. Ex. 1-A.

Even though it was not required by statute or regulation,³ the NRC Staff referred the matter of restart of the GETR to the Commission's Advisory Committee on Reactor Safeguards (ACRS) for its review. An ACRS subcommittee meeting was held with GE and the NRC Staff on November 14, 1979, after which the Staff considered additional elements of information upon which its review had not previously concentrated. Stf. Ex. 2; Tr. 1883-86.

On May 23, 1980, after review of this additional information the Staff issued its final Safety Evaluation regarding the proper geologic and seismic design bases for the General Electric Test Reactor. The Staff modified its preliminary position to specify a surface displacement of 1.0 meter beneath the GETR as the appropriate design basis. The Staff further indicated its willingness to complete its review concerning the adequacy of the modified GETR seismic design. Stf. Ex. 1-B. Following additional ACRS subcommittee meeting on June 16 and 17, 1980, on October 27, 1980, the Staff issued its Safety Evaluation Report (SER) for the GETR with regard to landslide hazard and seismic design of structures, systems, and components important to safety. Although the Staff had not finalized its

² Citations to oral testimony in the transcript give the transcript page or pages. Citations to prepared written testimony give the last name of the witness or witnesses, the page of the transcript immediately preceding the prepared testimony, and the page or pages of the prepared testimony to which reference is made. Examples are: Jones, ff. Tr. 1500 at 5; and Jones and Adams, ff. Tr. 1600 at 10-12. Citations to exhibits designate the party who introduced the exhibit, the number of the exhibit, and the page or pages to which reference is made. Example: Lic. Ex. 2 at 10-12. Citations to the Stipulation, dated May 17, 1981, indicate the number and lettered statements of fact included in section "B" of that Stipulation. An example is: Stip. para. 2.a. Citations to the Stipulation of Facts set forth in this Initial Decision (Part III, *infra*) indicate the paragraph number only. An example is: Stip. para. 5. Finally, citations to proposed findings are as follows: to "Licensee's Proposed Findings of Fact and Conclusions of Law," dated July 16, 1981, indicated as Lic. Find., followed by the referenced finding number; "Intervenor's Proposed Findings of Fact and Conclusions of Law," dated July 23, 1981, are indicated as Int. Find., followed by the numbered finding being referenced; "Staff's Proposed Findings of Fact and Conclusions of Law," dated July 31, 1981 are indicated as Stf. Find., followed by numbered finding being referenced.

³ Section 182(b) of the Atomic Energy Act requires ACRS review for construction permit (CP) and operating license (OL) applications, and amendments thereto "specifically referred to [the ACRS] by the Commission." 42 U.S.C. §2232(b). 10 CFR §50.58(a) imposes mandatory referral for CPs and OLs, but provides that applications for CP and OL amendments may be referred to the ACRS. The rulemaking notice accompanying the 1973 amendment to 10 CFR §50.58(a) clearly indicates that the Commission Staff has discretion to determine whether a particular CP or OL amendment application should be referred to the ACRS. 38 *Fed. Reg.* 22796 (August 24, 1973).

position regarding effects of soil properties on the seismic analysis, the Staff tentatively concluded that upon completion of the proposed modifications, the GETR could be operated safely considering the geologic and seismic design bases determined by the Staff. Stf. Ex. 1-C.

The NRC Staff's SER was submitted to the ACRS. The ACRS met on November 6-8, 1980 to review the issue of GETR restart. The Committee concluded that the NRC Staff's geologic and seismic design bases were sufficiently conservative, and that the plant, as modified, should be able to withstand the postulated seismic events with no significant release of radioactive material. Subject to resolution of the effects of soil properties on the seismic analysis, the ACRS concluded that the GETR, after modification, could be restarted and operated at its rated power level of 50 MW (thermal) without undue risk to the public health and safety. Stf. Ex. 2.

On January 15, 1981, the NRC Staff issued a supplement to its SER in which it concluded that the soil properties issue had been satisfactorily resolved and that the Staff's evaluation regarding Issues (1) and (2) of the Show Cause Order was complete. Stf. Ex. 1-D.

A "Notice of Hearing" was published on May 7, 1981. The hearing commenced in Livermore, California on May 27, 1981, at which time limited appearance statements from the public were received. Tr. 187-224. Evidentiary sessions commenced on May 27, 1981 and continued through May 29, 1981 in Livermore. The hearing reconvened in San Francisco on June 1, 1981 beginning with additional limited appearance statements. Tr. 731-67. The evidentiary sessions concluded on June 10, 1981. The record was kept open until June 26, 1981 for corrections and other concluding matters.⁴ The evidentiary record, consisting of 2306 transcript pages, includes the prefiled written and oral testimony of witnesses for the Staff, the Licensee, and Joint Intervenors together with documentary exhibits offered and received into evidence as indicated in Appendix A hereto.

II. OPINION

The issues in controversy among the Parties in this proceeding involve the geologic and seismic characteristics of the GETR site. The Staff has recommended the following as the proper seismic and geologic design bases:

1. The Regulatory Guide 1.60 spectra anchored to 0.75g as the maximum effective vibratory ground motion at the site. This is set by motion on the Calaveras fault.

⁴ The Staff and the Licensee made timely submittals of their transcript corrections. Intervenors also made a timely submittal, indicating that they had no corrections to the transcript. By Board Order dated June 29, 1981, those transcript corrections were approved and the record in the proceeding was closed.

2. A surface displacement of one meter of reverse-oblique net slip along a fault plane which could vary in dip from 10 to 45 degrees and which could occur on a Verona fault zone strand (splay) beneath the GETR during a single earthquake event.
3. An effective vibratory ground motion of 0.6g, anchoring the Regulatory Guide 1.60 spectra, together with a fault displacement of one meter as described in 2. above.

Intervening parties have contended that the seismic design basis for the GETR should include a surface rupture of 2.4 meters and a vibratory ground motion above 1.0g.

The following are the major elements the Board finds persuasive in support of the seismic and geologic design bases recommended by the Staff.

The Verona fault was assumed to rupture along a fault length of 12 km. Field mapping and trenching demonstrated that the Verona fault length is substantially less than 12 km. Further, worldwide data indicate that actual rupture length would be substantially less than the total fault length.

Earthquake magnitudes of 6-6.5 and 7-7.5 may occur on the Verona and Calaveras faults respectively. The subsequent analyses used to develop design bases for vibratory ground motion assumed these earthquake magnitudes even though the available evidence shows that these are upper bound values.

The Verona fault was assumed to have been active during Holocene times (within the last 10,000 years) although trench data indicate that the last movement may have been pre-Holocene, and the seismological evidence characterizes the fault as "possibly" active.

An earthquake of magnitude 6.5 on the Verona fault was assumed to occur during the operating life (about 20 years) of the reactor in spite of the fact that a magnitude 6.5 event could be tens of centuries away.

In deriving the basis for 1-meter surface offset, it was assumed that the cumulative offset, measured on the several splays of the Verona fault zone, would aggregate in the future along a single splay beneath the reactor, in spite of the fact that this has not occurred for at least 128,000 years.

Minimum soil age estimates have been combined with maximum measured offsets to derive the slip rate from which the amount of future surface displacement can be predicted. It was assumed that all of the surface displacement in the trenches occurred co-seismically with maximum vibratory ground motion even though aftershocks and creep may well have contributed to the amount of surface displacements observed in the trenches. Moreover, the location of the trenches was such as to bias the measured surface displacements toward greater offsets.

The design basis for surface displacement assumes that the fault will occur directly beneath the reactor even though movement has occurred on the existing shears away from the reactor foundation during the last 128,000 years without formation of new splays between the existing shears or under the reactor. No

reliable positive evidence has been found to show that a fault exists under the reactor.

The design basis of one (1) meter of surface displacement on a single splay of the Verona fault exceeds the mean plus one standard deviation of the surface displacements observed during the 1971 San Fernando earthquake. The San Fernando fault is a substantially more active fault and capable of greater displacements. Further, when compared with worldwide data regarding displacements for earthquakes of magnitude 6 to 6.5, the one (1) meter design basis is conservative.

A surface displacement of one (1) meter beneath the reactor foundation was specified as the design basis even though probability analyses showed an expected annual occurrence to be 10^{-6} or less. This probability is less than the probability for which the NRC Staff will require consideration of natural phenomena in the design basis. Moreover, the absolute upper bound probability for the initiating event of a surface displacement of one (1) meter under the reactor foundation (10^{-4}) is comparable to the probability of core melt in a large nuclear power plant.

A one (1) meter surface displacement was assumed to intersect the reactor foundation even though geotechnical engineering considerations indicate that any fault originating beneath the foundation will deflect around the foundation.

Loads caused by surface displacements and vibratory ground motion were assumed to act simultaneously, even though this combination is considered to be a worst case.

Design basis values for response spectra were developed based upon Regulatory Guide 1.60, which envelopes the mean plus one standard deviation of the historic earthquake ground motion records (including the most severe horizontal motion measured at Pacoima Dam during the 1971 San Fernando thrust fault event.

The Regulatory Guide 1.60 response spectra are at least eight times more stringent than the uniform building code requirements for critical facilities (schools, hospitals, etc.). These spectra were anchored to effective accelerations of 0.75g and 0.6g for earthquakes on the Calaveras and Verona faults, respectively, even though the evidence would support more realistic values of 0.6g and 0.4g, respectively.

Regulatory Guide 1.60, anchored to 0.8g, would be a reasonably conservative design basis for a site proximate to the largest fault in the western United States, the San Andreas fault.

As a final point of perspective, the NRC and USGS geology and seismology witnesses were asked the question as to when, discounting all other evidence (including probability analysis) and based upon geological evidence alone, one would expect a design basis event at the GETR site. In response, all witnesses were of the view that the most limiting design basis event (magnitude 6.5 earthquake, coupled with a one (1) meter surface offset), was unlikely to occur within the operating lifetime of the GETR. In this regard, the earliest estimate for time to this occurrence, if it occurred at all, was probably 5,000 years in the future.

It is the opinion of the Board that the record developed supports the conclusion that the geologic and seismic design bases recommended by the Staff and enumerated above, are conservative and are those which are proper for the GETR facility (ISSUE ONE).

There was no dispute among the parties as to whether required modifications can be made so that GETR structures, systems and components important to safety can remain functional during, or after, a seismic design event.⁵ The analysis of the structures, systems and components, together with the required modifications, are contained in Findings 107 to 181, *infra*.

Therefore, the Board finds that the design of GETR structures, systems and components important to safety do require modification and these modifications can be made so that the GETR structures, systems and components important to safety can remain functional in light of the seismic bases determined in ISSUE ONE.

III. STIPULATION OF FACTS

The parties entered into a stipulation under which it was agreed that certain matters of fact were not in issue, could be accepted by the Board as given in its decision, and need not be litigated in the hearings.⁶

These matters of fact are as follows:

1. An average slip rate of 0.0004 ft/yr (0.012 cm/yr) fits a curve of cumulative apparent dip slip separation versus age of displacement on the Verona fault.
2. The Verona fault is tectonic in origin.
3. Geologic data indicate that the GETR site is located within a zone of faulting (the Verona fault) which is at least 2200 feet wide.
4. Assuming that alluvial deposits in B-1 extended beneath GETR, the reactor rests on beds older than 70,000-130,000 years and younger than 300,000 years.
5. The assumption that the San Fernando and Verona fault zones are comparable is a conservative assumption.
6. The Verona fault, including its northwesterly projection along possible splays of the Pleasanton fault, has an estimated maximum surface length of 12 kilometers.

⁵ Intervenor's witness I. W. Rutherford stated that some structural damage could be expected in the event of a surface rupture beneath the reactor although he could not quantify such damage (Tr. 2182).

⁶ The first Stipulation of the parties was transmitted to the Board by letter from NRC Staff counsel dated May 11, 1981, and approved and adopted by the Board in its May 14, 1981, Final Prehearing Conference Order.

7. The length of observed surface rupture during the San Fernando event was about 12-15 kilometers; movement was predominantly in a thrust sense with a substantial horizontal component.
8. Calculated slip vectors along an assumed fault plane in the Orange Grove Avenue and Eighth Street areas of the San Fernando fault that surface ruptured during the 1971 San Fernando event indicate that 2.4 meters of net slip displacement took place.⁷
9. Concerning the 1971 San Fernando earthquake (based upon data by Barrows, *et al.*, 1973):
 - a. Regarding the 179 observations of vertical surface offsets occurring during the 1971 San Fernando earthquake, the mean of the observed vertical throw on a given fault break is about 34 centimeters (0.34 meter).
 - b. Of the 179 observations, 97% were less than 1 meter and 5 observations equaled or exceeded 1 meter.
 - c. The maximum vertical offset noted which exceeds 1 meter is 160 centimeters (1.6 meters).
 - d. One meter of vertical offset exceeds the mean plus two standard deviations for the San Fernando data.
10. All of the shears exposed in trenches at Vallecitos Center have dips less than 45 degrees; 70% of dips measured are 30 degrees or less; two main shears closest to GETR have dips ranging from 0 to 25 degrees.
11. The potential earthquake sources that are important in assessing the vibratory ground motion hazard at the GETR site are the Calaveras fault and the Verona fault. Earthquakes occurring on these faults could have magnitudes of 7 to 7.5 and 6 to 6.5, respectively.
12. Strike-slip faults subsidiary to and connected to the San Andreas fault have generated maximum earthquakes of magnitude about 7 to 7½ based on the data of Coffman and Von Hake (1973).
13. The base of the GETR foundation mat, which is located about 20 feet below grade, is underlain by very dense clayey sand and gravel with occasional layers of very dense sandy and/or gravelly clay to a depth of 70 feet.
14. There is a hard, cemented stratum known as the middle conglomerate unit of the Livermore Gravels, which crops out in hills on the west and south of the site, and which at the GETR site, is more than 70 feet below the surface.

⁷ During the hearings the Staff modified its position concerning the width of the zone across which breakage was observed on the San Fernando fault (Tr. 1311-16). The result of this would nullify the last two sentences of the original Stipulation. Accordingly, those two sentences have been deleted in this version of the stipulated facts.

15. Standard Penetration Tests performed for GE on the materials underlying the GETR Foundation mat show blow counts of from 50 to 100 blows/foot penetration, affirming the very dense nature of these soils.
16. Groundwater levels at GETR were shown to vary from 20 feet to 28 feet below plant grade.
17. All of safety-related structures, systems and components necessary to shut down the facility and maintain the reactor in a safe shutdown condition during and following the design basis seismic events are identified in Table I, Section A of the SER (this is not an admission as to the proper seismic and geologic design bases of the GETR).
18. The horizontal vibratory ground motion at the GETR site resulting from an earthquake of magnitude 6 to 6.5 centered on the Verona fault could contain acceleration peaks as high as 1g. However, the overall level and duration of shaking at the GETR site would be less than for a magnitude 7 to 7.5 earthquake centered on the Calaveras fault.
19. The procedure used to assess the stability of hillside deposits as a result of an earthquake as described in Section 2.3, page 3 is appropriate for the purpose of this proceeding.⁸
20. The investigations and reports provided by General Electric regarding landslides satisfy the requirements of 10 CFR Part 100, Appendix A, Section V, Seismic and Geologic Design Bases ((d) Determination of Other Design Conditions — (2) Slope stability). In addition, these investigations and reports are in agreement with Standard Review Plan Section 2.5.5, Stability of Slopes.
21. An earthquake-induced slope displacement (landslide) of 1 meter is conservative.
22. Ground surface displacements resulting from these slope movements would be expected to occur near the toe of the slope, in the vicinity of the observed shear zone, and at some distance (approximately 300 feet) from the GETR plant. Therefore, ground surface displacements due to the postulated landslide must be considered in the design of safety related equipment located near the toe of the slope (*e.g.*, fuel flooding system piping) but need not be considered in the design of the GETR reactor structure.

IV. FINDINGS OF FACT

Our findings of fact parallel the first two issues set forth by the Commission in its Memorandum and Order of February 13, 1978. The third issue in the Memorandum

⁸ Stf. Ex. 1-C Part I, Section 2.3 at 3-4.

dum and Order, whether activities under the GETR operating license should continue to be suspended pending resolution of the first two issues, was not litigated in the hearing, as the Licensee stipulated that it did not presently intend to seek authority for interim operation pursuant to the third issue. Stip. para. 1. The first portion of our findings deals with the proper geologic and seismic design bases for the GETR. This issue in turn breaks down into subissues concerning geology, seismology, and earthquake engineering. The second issue involves the adequacy of the design of the GETR structures, systems, and components important to safety in light of the design bases determined in connection with issue one. These findings are set forth below.

ISSUE ONE: Determination of the Proper Seismic and Geologic Design Bases for the GETR Facilities

A. Controlling Geologic Features

1. Regional Setting

1. The GETR is located in the Livermore Valley near Pleasanton, California about 35 miles east-southeast of San Francisco in a highly active tectonic environment. The predominant geologic and seismic feature of northern California and the San Francisco Bay area is the San Andreas fault (Lic. Ex. 1 at 35; and Tr. 227-29) which forms the boundary between the North American Continental plate and the Pacific plate. Movement of this fault is apparently occurring at about 6 cm/yr with the Pacific plate moving northward relative to the North American plate. This movement results from a regional orientation of the maximum principal stress that is approximately north-south. (Lic. Ex. 1 at 35, 36, 50; Tr. 227-29; Stf. Ex. 1-A at 10, 11.)

2. In the vicinity of the San Francisco Bay, the San Andreas fault system consists of the main San Andreas fault itself and several other branching and subparallel faults. One of these is the Calaveras fault zone which passes about 2 to 3 kilometers west of the GETR site. Lic. Ex. 21 at 20; Tr. 285-86; Lic. Ex. 1 at 10. The Calaveras fault is a northwest trending strike-slip fault which lies at the western reach of the Livermore Valley. (Lic. Ex. 1 at 36-37.)

3. At the eastern reach of the Livermore Valley, another northwest trending right lateral strike-slip fault, known as the Greenville fault, has been mapped northward to Mt. Diablo. Lic. Ex. 1 at 36-41. Although the Greenville fault is secondary in importance to Calaveras fault, the tectonic regime created between the Calaveras and Greenville faults establishes the geologic setting in which the lesser order Livermore, Verona, Las Positas, and Williams faults are located. Lic. Ex. 1 at 37-42; Tr. 227-29.

4. The following discussion addresses the tectonic regime which governs the lesser order faults in the Livermore Valley. The Livermore fault is a right lateral strike-slip fault, located to the west of the Greenville fault and trending roughly parallel to it. The Williams fault, another northwest trending structure, lies to the west of the Livermore fault and to the southeast of the GETR site, and is similarly a right lateral strike-slip fault. Its northern mapped extension is located some three to four miles south and east of the GETR site. If its mapped trace were extended northward, it would pass several kilometers or more east of the GETR site. The Las Positas fault is one of the few structural features that trends northeastward across the predominant northwest trend of the major faults. Lic. Ex. 1 at 41-45. It has been mapped and observed between the Greenville and Livermore faults, and it has been hypothesized to extend beyond the Livermore fault on a line which passes several kilometers to the south of the GETR site. Stf. Ex. 1-B, App. B at 64-67.

5. Because the Verona fault is the geological fault in closest proximity to the reactor, it is of greater importance than the others in the Livermore Valley. In order to characterize the nature and extent of the Verona fault, an extensive geological investigation involving more than 2½ miles of trenches was completed. Lic. Ex. 1 at 12-28; Lic. Ex. 2; Lic. Ex. 6. The fault is a zone of shears recognized in trenches and boreholes in the vicinity of the GETR. Analyses of regional geological evidence led to the hypothesis that the Verona fault is related to the compressional stress regime created in the region bounded by the Calaveras and Greenville faults and the Las Positas fault. Stf. Ex. 1-B, App. B at 64-67. GE experts, however, believe the geologic evidence for either a landslide or tectonic origin is permissive. Tr. 431-32. Both GE consultants and the California Division of Mines and Geology concluded that features are landslide in origin. Stf. Ex. 1-A, App. D. USGS geologists, as advisors to the NRC Staff, undertook a comprehensive review of arguments and data provided by GE relating to the presence or absence of the Verona fault. Stf. Ex. 1-B at 7. Their detailed review was reported in "Faults at the General Electric Test Reactor Site. Vallecitos Nuclear Center, Pleasanton, California, A Summary Review of Their Geometry, Age of Last Movement, Recurrence, Origin, and Tectonic Setting and the Age of the Livermore Gravel" (Stf. Ex. 1-B, App. B). The report supports the conclusion that the Verona fault should be considered to be a tectonic (earthquake) fault. This conclusion has been stipulated to for the purpose of this hearing. Stip. para. 2.b.

6. In terms of seismic risk to the GETR site, there is agreement among all of the experts and all parties that the controlling geological features are the Calaveras fault and the Verona fault. Stip. para. 11. Because of its known activity and relative proximity to the GETR site, the Calaveras fault is of obvious importance as a source of vibratory ground motion. Because the Verona fault is the feature in closest proximity to the reactor, it is likewise of importance, even though a measure of doubt may exist as to its real potential for seismic activity. Lic. Ex. 21 at 7-11; Tr. 1039; Ellsworth, ff. Tr. 996 at 3; Stf. Ex. 1-B, App. C at 14.

2. *Characteristics of the Calaveras Fault*

7. The Calaveras fault is well-defined geomorphically. Lic. Ex. 1 at 37-40. Earthquakes, ranging up to magnitudes estimated at 6.5, have been observed on the Calaveras fault within the past 120 years. Tr. 304-306. Its style of movement is predominantly strike slip, and as with all strike-slip faults, the zone of movement associated with the Calaveras fault is narrow and well-defined (about $\frac{1}{8}$ mile). Tr. 286-92.

8. While characterized as a branch of and subsidiary to the San Andreas fault, the Calaveras fault does not embody the earthquake potential which one can associate with the San Andreas fault. Tr. 228, 695; Stip. para. 12.

9. Although deformation along the San Andreas fault is apparently distributed at depth between it and other branching faults, including the Calaveras fault, there is no corresponding relationship of earthquake movements between the San Andreas fault and the Calaveras fault. Tr. 1078, 1229-30. Instrumentation has been in place since the turn of the century which might have demonstrated any sympathetic earthquake movement on the Calaveras due to events on the San Andreas, and conversely, on the San Andreas due to earthquake events on the Calaveras. Tr. 1218. There is no credible evidence to suggest sympathetic earthquake movement, as between the San Andreas and the Calaveras faults. Tr. 641-47, 88-90, 1228-31.

10. None of the experts that testified supported the hypothesis that the Calaveras and Verona faults are connected in a direct structural relationship. Tr. 263-65, 292, 313, 1015-16, 1082-84, 1893. Both GE and USGS have conducted extensive field mapping and investigations to the south and west of the GETR between the Verona and Calaveras faults, and have found no evidence to support a connection between the Calaveras and Verona faults. *Ibid.* The field between these faults, to the south and west of the GETR site, contains a distinct, well-defined, and exposed middle conglomerate unit of the Livermore gravels. This field is unbroken by any fault features of the age and sense of movement of the Calaveras or Verona faults. Tr. 296-98, 1083-86. Since this middle conglomerate unit is exposed, it provides evidence equivalent to trenching which precludes any connection between the Calaveras fault and Verona or Las Positas faults. Tr. 277-79, 296-98, 389-90.

11. To the north of the GETR site, a trench (denominated as "Trench E") was excavated across the mapped trace of the Verona fault. Lic. Ex. 1 at 23-25, Tr. 274-77. The exposure of Trench E showed that the Verona fault did not extend as far as Trench E and thus a northward connection of the Calaveras and Verona faults was precluded. *Ibid.* There is no geological evidence to support a postulated connection between the Verona fault and the Pleasanton fault to the north. *Ibid.* Tr. 1087. This would foreclose the possibility of a connection between the Verona and

Pleasanton faults, and an extension of the Pleasanton fault beyond its mapped trace to, in turn, connect with the Calaveras fault.

12. Perhaps the most persuasive evidence negating a connection between the Calaveras and Verona faults can be found from the extensive trenching in the immediate vicinity of the GETR. Tr. 274-77. The trenches at the GETR site indicated that the most recent possible movement along the Verona fault was at least 2,000 years ago. Stf. Ex. 1-B, App. B at 16-21. It is well known that repeated movement has occurred along the Calaveras fault in recent times. Tr. 304-06. Given this observed, recurrent movement on the Calaveras fault, and none on Verona for at least 2,000 years, a connection between these faults is not credible. Tr. 292, 312.

13. The Intervenor also has argued that the Calaveras fault could extend onto the site by development of new breaks along the Calaveras fault away from its well-defined mapped trace. However, the consensus of the expert testimony is that although one cannot preclude any possibility in dealing with geologic features, a new splay to the east of the Calaveras fault is extremely improbable. Tr. 644-47, 656-58, 698, 1017-19, 1021-22, 1789-91, 1794-96. The available worldwide data, which reflect observations measured over geologic time (millions of years), indicate that it is unlikely that well-developed fault systems with patterns of recurrent movement will develop new rupture traces. Tr. 1017, 1340-41. More significantly, the field mapping of the unbroken middle conglomerate unit to the southeast, south and west of the GETR site, and the on-site trenches permitted observations of the geological record for hundreds of thousands of years to millions of years, during which no faulting which is characteristic of the Calaveras fault (*i.e.*, northwest trending right lateral strike slip) has occurred on the site or immediately to the east of the Calaveras fault away from its mapped trace. Tr. 263-65, 1015-16. In the absence of any evidence to support the future occurrence of an extension of the Calaveras fault to the site, it must be discounted as speculation.

14. The Calaveras fault is of greatest significance in terms of its potential for generating strong vibratory ground motion at the GETR site. The first step in defining that vibratory ground motion for design purposes consisted of estimating the magnitude of earthquake events which one could associate with the Calaveras fault. The parties have stipulated that a magnitude 7-7.5 event could be associated with this fault system (Stip. para. 11) and all qualified experts agree with this assessment. Tr. 681-82, 695, 1026-27; Stf. Ex. 1B, App. A at 1-5. It is well established that faults which are branches of and subsidiary to the San Andreas fault have the potential for generating earthquakes ranging up to a maximum of magnitude 7.5. Stip. para. 12. The length of the Calaveras fault (approximately 100 miles) correlates with available worldwide data for events ranging from 7 to a

maximum 7.5 magnitude. Tr. 681-82. The Staff's recommended value of 7-7.5 magnitude for the Calaveras fault is well supported by the evidence in the record.⁹

3. *Characteristics of the Verona Fault*

15. The Verona fault is characterized by dips angled (to the horizontal) between 10 and 45 degrees. Stip. para. 10. The Verona fault zone has an estimated width of 2200.¹⁰ Stip. para. 3.

16. The *maximum* surface length of the Verona fault, including its northwesterly projection along possible splays of the Pleasanton fault, is 12 km. Stip. para. 6. A possible connection to splays of the Pleasanton fault on the north is extremely unlikely. Tr. 274; Lic. Ex. 1 at 23-25. During the geological investigation, a trench (Trench E) was dug directly across the mapped trace of the Verona fault north of the site near Pleasanton. Lic. Ex. 1 at 24. That trench showed no evidence of faults or shears which could be associated in age or style of movement with the Verona fault. Tr. 247, 274-77; Lic. Ex. 1 at 23-25.

17. Dr. Herd of the USGS testified that based upon his extensive mapping of the region, there is no geological evidence to support a connection between the Verona fault and the Pleasanton fault. Tr. 1087. Dr. Brabb of the USGS considered such a connection theoretically possible, if the Verona fault turned southwesterly, and thus "avoided" the trench (Trench E) excavated on the northern trace of the Verona fault. Tr. 1200-03. In fact, to foreclose this possibility, GE performed seismic reflection and refraction profiles across the zone of Trench E and further to the southwest. Lic. Ex. 6, Apps. C and D. These studies preclude a bend around Trench E of any northern extension of the Verona fault to a possible connection with splays of the Pleasanton fault. Tr. 390; Lic. Ex. 6 at Apps. C and D. Since it includes the length associated with the possible splays of the Pleasanton fault, the stipulated 12 km length for the Verona fault is conservative.

18. Evidence was presented concerning possible connection between the Verona and Las Positas faults. Dr. Herd from the USGS indicated his opinion was that the Verona fault and the Las Positas fault were interconnected. Tr. 1976-77. Dr. Slemmons, staff witness, testified that he would assign little weight to an

⁹ The Intervenor has advanced arguments based upon the hypothesis that the Calaveras fault is in the state of "seismic gap." That is, since the last event on Calaveras of magnitude 6 or greater occurred more than 60 years ago, the absence of recent activity suggests that a major earthquake (7-7.5) could occur at any time. Although qualified experts have disagreed with the manner in which the Intervenor has construed the theory of seismic gap (Tr. 588-93, 1615-18, 2011-12, 2018-25), there is no disagreement that a 7-7.5 event on the Calaveras fault is possible. By the same token, the seismic gap argument makes little difference in the context of the Show Cause proceedings, since the NRC Staff's design bases assume this possibility, and have assigned a probability of 1 to the event. Tr. 1622-23, 2011-12.

¹⁰ The width of the zone is the "outcrop width," or the distance between the surface expression or splays observed in trenches at the site. Tr. 1260.

interpretation that would connect these faults because of differences in mechanisms and difficulties in the dip of the two fault planes. The Licensee, on the basis of its investigations and analyses, developed two major lines of evidence to support this view. It was pointed out that there is an exposed middle conglomerate unit of Livermore gravels, which extends to the southeast of the GETR (Lic. Ex. 1 at 25-26; Tr. 298-301). In tracing this middle conglomerate unit in a continuous arc to the southeast of the GETR, exposure of the unit was found not broken by any faults which could be associated in age and style of movement with the Verona fault. Secondly, Licensee pointed out that if there were a connection to the Las Positas fault, the trace of the Verona fault must take two abrupt bends around the middle conglomerate unit to the southeast of the site to find a path for connection. Lic. Ex. 1 at 25-26. To check this possibility, GE, with the concurrence of NRC and USGS, dug a trench across the area where the Verona fault trace would complete its circuitous path to connect. *Id.* at 26-28. This trench, which is known as the A trench, did reveal a fault-like structure. However, the style of faulting in the trench was unlike that associated with the Verona fault or the Las Positas fault and indicated that the fault in Trench A is the Williams fault. *Id.* at 26. As previously indicated, the Verona fault is a low-angle thrust fault with the northeastern block of ground overthrusting the southwestern block of ground. The fault in Trench A had a nearly vertical orientation in contrast to the low-angle thrusting associated with the Verona fault. *Ibid.* Even if the Verona fault did pass through the middle conglomerate unit, and underwent a transformation from a low-angle thrust fault to a high-angle fault, the style of movement observed in Trench A is still inconsistent. Lic. Ex. 1 at 27; Tr. 298-99. After completing its bend and transforming to a high angle fault, the Verona fault would have the northeast side thrusting over the southwest side, consistent with its style of movement at the GETR site. Lic. Ex. 1 at 26-27. Then, as a matter of simple physical continuity, the fault in Trench A must necessarily show the northeast side thrust above the southwest side. *Ibid.* In fact, the opposite was observed in Trench A, and therefore, the fault in Trench A cannot be the Verona fault. The logical explanation for the observations in Trench A is that the fault observed is the Williams fault.¹¹ *Id.* at 27-28.

19. There appears to be no reliable evidence to establish a connection between the Verona and Las Positas faults. This, in turn, buttresses the conclusion that the 8 km distance, between Trench E on the north and Trench A on the south, defines the maximum length of the Verona fault, and that the 12 km length stipulated by the parties is conservative. *Ibid.* at 28.

¹¹ The Williams fault would, if extended, pass to the north and east of the site on a parallel course with the Calaveras and Greenville faults. See Lic. Ex. 1 at 41.

20. The available seismic evidence concerning the Verona fault was extensively reviewed during the course of the GETR proceedings. The USGS completed a study of the Livermore Valley region seismicity. This study, entitled "Seismicity of the Livermore Valley, California Region 1969-79, Open-File Report 80-515," was prepared by S. W. Ellsworth and S. M. Marks, Stf. Ex. 1-B, App. C. With respect to the Verona fault, this study indicated that the Las Positas, Pleasanton and Verona faults are identified as probably seismically active faults. This conclusion was later modified with respect to the Verona fault so as to label it possibly active. Ellsworth, ff. Tr. 996 at 3. Ellsworth and Marks did conclude that earthquake focal mechanism solutions¹² for events near Vallecitos Valley demonstrate that this region is a zone of active thrust faulting and that some of these thrust events are in possible association with the Verona fault. Stf. Ex. 1-B, Section A at 9.

21. GE interpreted the soil stratigraphy in the trenches to indicate the last movement on the shears, whether caused by landslide or tectonism, occurred between 8,000 to 15,000 years ago. Lic. Ex. 1 at 51. After careful review, the USGS indicated that the most recent fault movement is believed to have occurred 2,000-4,000 years ago. Stf. Ex. 1-B at App. B. Dr. Slemmons indicated he would place an error band for fault displacement in the soil between approximately 1,500-2,000 years to 4,000 years before present for trench B-1, indicating the Verona to be a tectonic structure. Stf. Ex. 1-B at App. E. With the concurrence of the NRC Staff, GE performed its analyses on the assumption that the Verona fault is an active feature in Holocene times (less than 10,000 years ago). Stf. Ex. 1-B at A-5; Tr. 1216, 1220.

22. Estimates were made of the magnitude of the earthquake event which one could associate with the Verona fault. Dr. Kovach presented a correlation of fault area versus magnitude for worldwide data in order to estimate the expected magnitude for the Verona fault.¹³ Lic. Ex. 21 at 14-16. This correlation yielded magnitudes ranging from 5.8 up to 6.3, with a most likely value of 6.1. For the stipulated fault length of 12 km, Dr. Kovach's table would yield a magnitude of 6.0 or slightly less. Lic. Ex. 21 at 16.¹⁴ The NRC Staff's consultant, Dr. Slemmons, presented independently derived correlations of fault length, surface offset, and magnitude for a range of conditions which one might associate with the Verona fault. These analyses showed that for a 12 km length, one can expect a magnitude ranging between 6-6.5, with a maximum value of 6.5, and a mean value of about 6.1. Tr. 1183-87, 1231-35. Stf. Ex. 1-B at App. E.

¹² The USGS derived focal plane solutions for a series of recorded earthquake events in the Livermore Valley. Stf. Ex. 1-B, App. C. These focal plane solutions enable some to define the possible style of movement (*i.e.*, strike-slip or thrust fault) associated with those events. Lic. Ex. 21 at 8-9.

¹³ The fault area is that area along the fault plane from the surface to its maximum depth. Lic. Ex. 21 at 15.

¹⁴ For an 8 km length, 8 km width, the rupture length of $\frac{1}{2}$ of the total length, the magnitude would fall between 5.8 and 6.0. See Lic. Ex. 21 at 16.

23. It is significant to note that the magnitude which one might associate with the Verona fault is not strongly dependent upon variations in length. Tr. 1574-75, 1585. Dr. Kovach's correlations show that for an increase in length of a factor of 2, one might expect an increase in magnitude of 3/10ths. See Lic. Ex. 21 at 16. Dr. Slemmons' correlations showed a similar insensitivity to fault length. Tr. 1585. Even if, for example, the Verona fault were connected to the Las Positas fault, the total length of the Verona fault would not exceed 23 km, and the estimated magnitude would not exceed 6.5. Tr. 1585; Lic. Ex. 21 at 16. Therefore, a magnitude 6.5 event on the Verona fault can be considered a conservative upper bound. Tr. 1231-35.¹⁵

B. Surface Displacement Along the Verona Fault

24. As indicated above, the controlling geological features for the GETR design are the Calaveras and Verona faults. For reasons set forth above in the discussion of the Calaveras fault characteristics there is no evidence to support projection of the Calaveras fault onto the site. Hence there is no reason for encompassing movement associated with the Calaveras fault on the design basis for surface displacement at the GETR.

25. Surface displacement design basis considerations were the subject of intense questioning at the hearings. The NRC Staff final recommendation is a value of 1.0 meter of net reverse oblique slip, occurring on a single splay of the Verona fault, as the design basis for surface displacement. Stf. Ex. 1-B at A-5.

26. Based upon its analyses and advice of consultants, the Staff initially concluded in its September 6, 1979 report that 2½ meters of reverse-oblique net slip along a fault plane which could vary in dip from 10 to 60 degrees provides a conservative description of surface slip on the Verona fault zone during a single event. This judgment was based in part on observations and comparisons with the maximum calculated net slip displacement observed during the 1971 San Fernando, California earthquake. The position was based also on comparisons with the available worldwide fault offset information for reverse and reverse-oblique slip faults and the recommendations of the USGS and Dr. Slemmons. In addition, because of an inability to quantify the likelihood of new rupture between the existing shears, the Staff concluded that this offset could occur beneath the reactor. Stf. Ex. 1-B at 11.

27. Subsequently, both GE and the Staff presented their conclusions to a subcommittee of the ACRS. As a result of that meeting and the questions raised by

¹⁵ It should be noted that a hypothesized connection to the Calaveras fault would not impose a Calaveras magnitude 7-7.5 event upon an event on the Verona fault. Even with the connection, the Verona fault has insufficient length, depth, and potential for release of energy to generate an earthquake having the characteristics associated with the Calaveras fault. Tr. 269-70, 1580-82.

the Subcommittee and its consultants, further review of the seismological parameters and a probabilistic assessment of the surface fault potential were undertaken. On April 12, 1979 GE submitted a probability study done by Jack R. Benjamin and Associates but the Staff refused to accept the study and GE undertook a new probability study. In addition, the Staff received a number of reports from GE relating to the probability study, supporting bases for geologic assumptions in the study, a fault evaluation of GETR excavation photographs, dip of faults, discussions of the Livermore Valley regional seismicity, and the significance of observations of the 1979 Imperial Valley earthquake. Stf. Ex. 1-B at 1, 2.

28. The Staff and its consultants reviewed the newer information, and subsequently the Staff modified its conclusion regarding the proper design value for surface offset, assigning a final design value of one meter of offset for the GETR site. The bases for the selection of the final geologic design basis are set forth in the Staff's Safety Evaluation Reports (Stf. Exs. 1-B and 1-C).

29. The USGS geologists concluded that one meter of surface offset is not a conservative estimate of the total amount of offset that could occur along the Verona fault. Tr. ff. 996 at 5. Inherent in this opinion is that the total amount of offset will not necessarily occur on any one fault plane or strand of the Verona fault. The USGS indicated, however, it was not its responsibility to develop a design value for surface offset beneath the GETR and this conclusion was not a design basis recommendation. *Ibid.* The Staff concurred that the possibility exists that offsets larger than one meter could occur at some time in the future in the Verona fault zone, but that it is unlikely that an offset greater than one meter would occur on a single splay of the Verona fault directly beneath the reactor. No such splay of the Verona fault is known to go beneath the plant, but for purposes of design of the facility, the consideration of one meter of offset on a splay of the fault beneath the reactor is required. Tr. 1394-95.

30. The USGS concluded that there were no direct measurements of Holocene (less than 10,000 years old) displacement in the GETR trenches on a single splay of the Verona which exceeded three feet in length. Stf. Ex. 1-B, App. B at 7, 22; Tr. 1484-85. Dr. Slemmons testified that the areas of trenching, *i.e.*, where the 2 to 3 feet offsets were measured, are where the likely maximum displacements are to be expected near the GETR. Tr. 1189-90.

31. The USGS interpreted 5.7 feet of offset from the log made of trench T-1. Counsel for the Licensee and the Board members questioned the USGS in detail regarding this interpretation. Tr. 135-79, 1430-1523. Dr. Herd and Dr. Brabb testified that this interpretation was not based on a direct measurement as was done in subsequent trenches. Rather, the 5.7 feet of inferred offset in T-1 is based on an interpretation of data from a log which was made several years after the USGS trench visit. Tr. 1165-66, 1477. T-1 was excavated for the purpose of determining whether there was or was not an active fault in close proximity to the plant and not for measuring the amount of displacement. Tr. 1134, 1159. Drs. Brabb and Herd

indicated other difficulties in interpreting the offsets in trench T-1 without more information and verification of the soils in the trench and the unavailability of logs until well after the trench was closed. Tr. 1468, 1472-4. Dr. Herd's interpretation of the displacements, which was based in part upon photographs taken of the trench excavation (Stf. Exs. 5-A and 5-B), requires that the surface soil is offset. However, no offset of the surface soil is reported in the log of T-1. Tr. 1507-10. Dr. Herd concluded that the likely explanation is that the offset A-2 soil horizon was simply not identified by the persons logging the trench. Tr. 1509-10. Unlike the USGS, the Licensee's consultant interpreted T-1 to exhibit at most 2 feet displacement. Lic. Ex. 1, App. A at A-1.

32. Testimony by Dr. Jackson and Dr. Slemmons suggests additional reasons why a definitive conclusion is not possible from the evidence produced at the hearing from the extensive examinations on trench T-1. T-1 was located in a swale, with a rise on either side of it, whereas subsequent trenches were located on slopes inclined to the west. Consequently, there could have been some erosional aspect parallel to the fault at trench T-1. Tr. 1513. Dr. Slemmons indicated that T-1 may be a unique location where the two faults recognized in the B trenches come together (merge). Tr. 1295.

33. Thus, the interpreted 5 feet of offset in T-1 may be a cumulative displacement of multiple events, each occurring on the splays of the Verona, and none of which would necessarily exceed 3 feet of displacement individually. *Ibid.* The inconsistency between the possible offset of 5 feet in T-1 and 2-3 feet offsets measured in the other trenches further led Dr. Slemmons to suggest that trench T-1 probably exhibited a cumulative effect of two events, rather than a single event. Tr. 1585.

34. In light of the 22 direct measurements of displacements in the trenches closer to the GETR, all of which exhibited displacements of 3 feet or less (Stf. Ex. 1-B, App. B at 22; Lic. Ex. 1 at 50-51) and the above discussion indicating uncertainty surrounding trench T-1 as a model for indicating geologic activity beneath the GETR, it does not appear reasonable that 5 feet of offset in trench T-1 should be considered the controlling factors in the selection of a design value offset for the GETR. In this regard, even if the 5 feet interpretation at trench T-1 were included with the 22 direct measurements in the computation of slip rate, the stipulated 0.0004 feet per year value will not change in any significant way. Stf. Ex. 1-B, App. B at 22, 33-34; Tr. 571-73. Thus, the T-1 trench interpretation does not detract from the conclusion that 1.0 meter of surface displacement is a suitably conservative design basis. Further trenching could be undertaken, but results of a "fault deflection analysis" performed by the Licensee makes this additional investigation of little value.

C. Supporting Evidence for 1-Meter Offset Recommendation

35. Several lines of evidence were presented to demonstrate the appropriateness and conservatism of the Staff's 1.0-meter criterion, *i.e.*, 1) the data derived from the trenches at the GETR site and the calculations of slip rate based upon those data; 2) a comparison of the Verona fault with other faults in California, including the San Fernando fault; 3) a comparison of the Verona fault with worldwide data for maximum surface displacements during faulting; 4) two major independent probability analyses which demonstrate that the likelihood of a design basis surface displacement beneath the reactor is extremely low (10^{-6} per year or less); and 5) analyses of soil structure interaction for the GETR facility and site which shows that if a fault were located under the reactor, such that its upward projection would intersect the foundation, movement along that fault would deflect around the foundation and not intersect the foundation. Each of the primary lines of evidence assessed for evaluation of the appropriateness and conservatism for the Staff's recommended design basis are presented below.

1. *The Observations of Displacements in the GETR Trenches — Slip Rate*

36. The parties have stipulated that an average slip rate of 0.0004 feet per year (0.012 cm/yr) fits a curve of cumulative apparent dip slip separation versus age of displacement on the Verona fault. Stip. para 1. This value was derived on the basis of some 22 direct measurements of surface displacement in the GETR trenches. Lic. Ex. 1 at 50-51. These measurements were verified by GE's consultants and the USGS. Tr. 1168. Experts considered these direct measurements to be the primary and most reliable bases for assessing surface displacement in the trenches Tr. 1156-57, 1165. The trench data are the most reliable and applicable evidence for setting a design basis for surface displacement. Lic. Ex. 1 at 49-50; Tr. 1187-88.

37. The slip rate is significant inasmuch as it establishes a basis for prediction of future surface displacement on the Verona fault. Future movement would result from a build-up of strain along the Verona fault, and a subsequent, sudden release of energy from slip. Lic. Ex. 1 at 53; Tr. 229-32. Based upon the average slip rate, one would expect a build-up of 1 meter of strain every 8,000 to 10,000 years. Lic. Ex. 1 at 54; Tr. 229-32, 1659. If this built-up strain were released in a single event, one would then predict a surface displacement of 1 meter at the end of a 8,000 to 10,000 year period. *Ibid.* If more frequent surface displacements occurred, these would be characterized by lesser amounts of surface displacement. For example, if strain built up over a 4,000 to 5,000 year period and was suddenly released in one event, a surface displacement on the order of 0.5 meter would be expected.

38. The slip rate determined from the observations and measurements in the trenches was based on conservative interpretations of the available data. That is, future surface displacements predicted from the stipulated slip rate value will overpredict the amount of surface displacement along a single splay of the Verona fault. There are at least two reasons for this: a) the average slip rate was based upon the total cumulative displacement measured across the entire Verona fault zone, and b) the average slip rate was based upon conservative interpretation of the age of soils and sediments in the trenches. The slip rate was based upon the *cumulative* displacement across the entire Verona fault zone. Stip. para. 1; Lic. Ex. 1 at 53-54; Stf. Ex. 1-B, App. B at 22, 33-34; Tr. 1027-29. There were three primary splays of the Verona fault observed at the site. Lic. Ex. 1 at 50-51; Stf. Ex. 1-B, App. B at 22. None of these splays intersect the reactor foundation. Lic. Ex. 1 at 55-56. The slip rate calculation treats the Verona fault as a total zone in which surface displacement has been observed to occur to each of the three known splays. Lic. Ex. 1 at 54; Stf. Ex. 1-B, App. B at 22, 33-34, Tr. 1027-29. The actual surface displacement measured for each individual splay was added or accumulated to obtain the total displacement on the entire fault zone, along with the corresponding age of each such total displacement. *Ibid.* The slip rate was then calculated as the average cumulative or *total* displacement on the *entire* zone as a function of time. The trench observations indicate that the total displacement will in fact be shared among each of the three splays. Lic. Ex. 1 at 50-51; Stf. Ex. 1-B, App. B at 22. That is, as much as 1 meter of total offset will occur across the *entire zone* every 8,000 to 10,000 years, with each splay carrying a share of the one meter total. In order for one meter of offset to occur on a single splay, one must assume that no offset occurs on two of the splays, and that all of the offset along the fault zone occurs on a single new splay under the reactor. Tr. 1029-30, 1244-45.

39. This is a conservative approach since movement has occurred along the existing shears for a period of 128,000 to 195,000 years without formation of new splays between the existing shears, or under the reactor. Tr. 1030-32, 1245; Lic. Ex. 1 at 55; Jackson and Justus, ff. Tr. 996 at 11. Moreover, there were no *direct measurements* of recent displacements in the GETR trenches on a single splay which exceeded 3 feet. Lic. Ex. 1 at 50-51; Stf. Ex. 1-B, App. B at 22; Tr. 1484-85. In fact, the maximum 3 foot measurement of recent displacement was located at the base of the hillfront, where the stress regime would tend to exaggerate the amount of displacement measured. Tr. 1032-33, 1189-91. In addition, not all of the offset measured on a single splay in the trenches should be attributable to a single movement during a single event. Some of that movement could be attributable to multiple events; aftershock, creep, or gravity effects. Jackson and Justus, ff. Tr. 996 at 10-11, 1013, 1032-33, 1048-50. Thus, there is a high degree of confidence that the slip rate calculated from the trench data will

substantially overpredict the amount of future displacement on a single Verona fault splay during a single earthquake event.¹⁶

40. The stipulated slip rate was also based upon conservative interpretations of the available data concerning the ages of soils and sediments in the trenches.¹⁷ The slip rate was calculated by dividing the total measured offset on the trench shears by the period of time in which the offset took place. There is agreement that the lower paleosol (B-2) horizon was formed during the period from 70,000 to 130,000 years ago. Stip. para. 4; Tr. 1120-30. The last offset of the lower paleosol was thus assumed to have occurred 70,000 years ago. The most recent offset was determined by GE's consultants to have occurred 8,000 years ago. Lic. Ex. 1 at 50-53.

41. USGS concluded that the last offset occurred 2,000 to 4,000 years ago. Stf. Ex. 1-B at 19-20. USGS did not accept the correction proposed by GE for radiocarbon dates on the modern soils. Lic. Ex. 6; App. A at A-18-36. GE based its calculation of slip rate on the minimum possible period of time during which the offsets could have occurred, 70,000 years for the oldest offset, less 8,000 years for the most recent offset. Lic. Ex. 1 at 53. Factoring in the USGS age of soils for the last offset would increase the period of time during which the offset occurred and yield a slightly lower slip rate. Thus, the 0.0004 ft/yr slip rate calculated by GE and stipulated by the parties is based upon a minimum time period and maximum amount of movement, with the result that it would overestimate future surface displacements at the site.

¹⁶ The design basis also assumes that a new splay will develop under the reactor foundation and that all of the displacement along the Verona fault zone will occur on that particular splay. It is important to note that at the time the Staff issued its May 23, 1980 Safety evaluation, the entire analysis was colored by the belief then held by the Staff that a fault under the foundation was probable. Stf. Ex. 1-B at A-14, A-16-17; Stf. Ex. 1-B, App. B at 1. Indeed, this was one of the two major lines of evidence relied upon by USGS for their reservations as to the conservatism of the 1 meter surface displacement design basis. Stf. Ex. 1-B, App. B at 1. There is no reliable positive evidence that a fault which might intersect the reactor foundation actually exists under the foundation. Tr. 1039. GE, the NRC, and the USGS helped to plan, and agreed with, the location of the GETR trenches. Lic. Ex. 1; Tr. 473-77, 1345-46. The trenches near the reactor were located to intersect three lineaments shown on aerial photographs which were suggestive of the Verona fault. Tr. 1345-46. Upon excavation of these trenches, shears were discovered at locations corresponding to two of three lineaments predicted from the aerial photographs, while the third lineament proved to be an erosional nonconformity. *Ibid.* If any fault were under the foundation, there is no independent evidence from aerial photographs or otherwise, of its existence. A detailed review of high quality photographs of the original GETR foundation excavation was undertaken by GE, consultants for the ACRS, and USGS. No positive evidence of faulting in the foundation excavation was disclosed. Tr. 387-88, 451-52, 1035-37, 2013-15. This review caused USGS to downgrade its April 1979 position from "probable" faulting to "possible" faulting. Tr. 1035-38. It is agreed that this "possibility" implies a very low likelihood event. Tr. 1053-59. GE also interviewed personnel involved in the construction process who observed the excavation first hand, including one individual with a degree in mineral science and experience in geology. Tr. 2013-18. These interviews yielded no observations or recollections of any faults within the foundation excavation. *Ibid.*

¹⁷ There is no significant disagreement as to the validity of the direct measurements of the amount of displacement observed in the trenches. These measurements were, in fact, independently verified by the USGS. Tr. 1168.

2. Comparison with Other Faults, Including the San Fernando Fault

42. In order to provide an additional perspective on the 1 meter surface displacement design basis, the slip rates derived for the GETR site were compared with those for other faults in California. The Verona fault slip rate was compared with slip rate data determined for 5 major fault zones in California which are known to be active. The Hayward and Calaveras faults reflect more than 100 times greater slip rates. Lic. Ex. 1 at 59. The White Wolf and Sierra Madre faults, which like Verona are thrust faults, have more than an order of magnitude greater slip rate. Lic. Ex. 1 at 60. The Lakeview fault, which is a major segment of the San Fernando thrust fault system, has a slip rate which is more than 6 times greater than the Verona fault. Lic. Ex. 1 at 51.

43. The February 1971 San Fernando earthquake was employed by the NRC Staff as an analog or model to test the design basis surface displacement values for Verona. The San Fernando fault system comprised of thrust faults like the Verona is more than 100 miles in length, and rupture was observed on that fault for a distance of 12 to 15 km during the 1971 event. Lic. Ex. 1 at 60; Stip. para. 7. In contrast, the entire Verona fault system is, at most, 12 km in length, and it is highly unlikely that rupture would occur along the entire fault length. Stip. para. 6; Lic. Ex. 21 at 15; Justus, ff. Tr. 996 at 10-11. It should be noted that fault length is minimally related to the amount of displacement along a thrust fault. However, there are other significant differences between the San Fernando and Verona fault systems. Lic. Ex. 1 at 49. The San Fernando fault system is located near the "big bend" of the San Andreas fault where movement between the Pacific crustal plate and North American crustal plate is translated into enormous compressive stresses across the fault. Lic. Ex. 1 at 61-62. This compressive stress has been manifested in the dramatic uplift of the hills adjacent to the San Fernando fault. These hills rise abruptly more than 3,000 feet immediately adjacent to the fault, whereas the Vallecitos Hills rise more gradually to a maximum of 600 feet above the GETR. Lic. Ex. 1 at 66-67. There are a number of activities and characteristics for the San Fernando event that indicate it has a greater capability of producing a larger earthquake than the Verona fault zone. Tr. 1186. Thus, the San Fernando fault system represents a rigorous test for comparison of surface displacement with the Verona fault. Lic. Ex. 1 at 58-68; Tr. 232-34, 280-85, 1291-95, 1403-5, 1871-73; Justus, ff. Tr. 996 at 10.

44. The NRC Staff reviewed measurements of surface displacement for the 1971 San Fernando earthquake. Stf. Ex. 1-B at A-18-19. Of 179 observations of vertical surface offsets, the mean of the data is about 0.34 meter; 97% were less than 0.1 meter; and 5 observations equalled or exceeded 1 meter. Stip. para. 9a. One meter of vertical offset exceeds the mean plus two standard deviations for the San Fernando data. Stip. para. 9d. In view of the fact that the San Fernando fault is

a rigorous standard for comparison with Verona, it follows that these data support the conservatism of the Staff's 1 meter surface displacement design basis.

45. GE performed additional analyses in an effort to correlate all of the available data from the 1971 San Fernando earthquake. GE developed an analytical method whereby measurements of horizontal and vertical offsets in the San Fernando fault zone were statistically combined to develop a net slip value which is statistically representative of the San Fernando data. Lic. Ex. 1 at App. B. GE's analysis was prompted by the suggestion that the data presented in a paper by Robert Sharp of USGS were preferable, since they were based upon direct measurements of net slip taken at a single location. Lic. Ex. 1, App. B at B-2. Examination of that report indicated that *individual* offset components, rather than net slip, were measured, and the individual components were analytically combined by Sharp to determine net slip. Although mere arithmetic averaging of Sharp's data would yield a mean value in excess of 1 meter, the data base consisted of only 20 data points. *Ibid.*

46. In view of this, GE developed the statistical analysis using ten reported data sets for San Fernando offsets, *including the Sharp data*. Lic. Ex. 1, App. B at B-3. The total data base analyzed by GE included 238 measurements of vertical offset and 81 measurements of horizontal offset. Lic. Ex. 1, App. B at B-3. The GE statistical analyses determined that the mean value for net slip on the San Fernando fault was 0.22 meter. The mean plus one standard deviation for net slip was 0.72 meter. *Ibid.* Thus, these analyses confirm the conservatism of the NRC Staff's 1-meter design basis.

47. After commencement of the hearings, the USGS issued an Open File Report which presented a statistical analysis of the 20-point data set developed by Sharp. That report indicated that the mean of the San Fernando surface displacements, based upon Sharp's data and analysis, ranged between 0.58 and 0.78 meter. Tr. 258. The Staff's position did not change as a result of this report since it merely confirmed its view that the design basis 1 meter surface displacement on Verona exceeded the mean offsets observed for the more severe San Fernando fault system. Tr. 557-59.

48. At the Board's request, GE also reviewed this Open File Report and concluded that its analysis was not affected. The Sharp data set had already been included in GE's analysis, along with ten other data sets. Moreover, since San Fernando is a conservative model for comparison, a mean in the order of 0.78 would only confirm the conservatism of the 1 meter design basis. Tr. 551-56.

49. The comparison of expected surface displacements on the Verona fault with the San Fernando data provides confirmation for the conservatism of the NRC Staff's design basis. The mere fact that a 2½ meter surface displacement was calculated at San Fernando does not require the conclusion that 2½ meters is an appropriate design basis for GETR. The Staff rejected the absolute worst case as the appropriate standard for establishing a surface displacement design basis for

GETR. Tr. 1406-8. The available San Fernando evidence demonstrates that surface displacement in excess of 1 meter is not representative of future offsets for the Verona fault, and that the 1 meter surface displacement design basis is conservative for the Verona fault.

3. *Comparison with Worldwide Data*

50. As an additional point of reference for the 1 meter design basis, correlations of worldwide data for surface displacement were examined. Dr. Slemmons presented the results of worldwide data correlations for surface displacement and magnitude. Stf. Ex. 1-B at App. E; Tr. 1187-88. These correlations showed that for a magnitude 6-6.5 event one can expect an offset of 1 meter, with extreme values (such as San Fernando) of *maximum* displacement ranging up to 2.5 meters. Tr. 1187-88. These correlations are based upon the maximum displacements observed in each event correlated. Tr. 1189. To that extent they represent an extreme, worst case and do not substantially affect confidence in the 1 meter design basis.

51. Still another independent perspective on the worldwide surface displacement data was provided by Professor Kovach of Stanford University. Professor Kovach presented seismic moment correlations which related the magnitude of a given event to the fault area, displacement, and material properties of the subsurface rock in which a given earthquake event originates. Lic. Ex. 21 at 16-71. For conditions appropriate to the Verona fault, the seismic moment correlation yielded an average displacement ranging from 0.31 meter up to 0.58 meter. *Ibid.* at 17. Thus, for a magnitude 6-6.5 event on the Verona fault, the mean of the worldwide data shows a displacement on the order of 0.6 meter. *Ibid.* On this basis, as well as Dr. Slemmons' correlations, it follows that the 1 meter design basis is consistent with and well supported by the available worldwide data.

4. *Probability Analyses*

52. Two major and independent probability analyses were undertaken to assess the likelihood that a design basis surface displacement would intersect the GETR foundation. These analyses were undertaken by GE's consultants and by NRC's consultants, LLL and TERA. Although the methodology and approach in the two analyses differed, and although each was, in its own right, methodologically sound, it is significant that the results did not substantially differ. Tr. 1802-3, 1806.

53. GE calculated a best estimate probability for a surface displacement *of any size* under the reactor of 10^{-6} per year, with an upper bound or worst case probability of 10^{-4} per year. Lic. Ex. 1 at 80-82. TERA arrived at a best estimate

probability for a 1 meter surface displacement under the reactor foundation ranging from 10^{-6} to 10^{-8} per year, with a worst case probability of 10^{-4} . Tr. 1804-6. This would suggest that the probability of a design basis surface displacement is substantially conservative. Lic. Ex. 1 at 84; Bernreuter, ff. Tr. 1801 at 2.

54. The GE analysis analyzed the probability of surface displacement of any size under the reactor foundation. Lic. Ex. 1 at 69. The data from the on-site trenches showed that there were repeated movements, for a period of 128,000 to 195,000 years, along the two shears which bracketed the reactor building. No movement or shears occurred between the shears or under the reactor building foundation for at least 128,000 to 195,000 years. Lic. Ex. 1 at 72. Given these facts, GE developed a simple, straightforward model which calculated the probability that a surface displacement of any size would occur between the shears and intersect the foundation of the reactor building. This model yielded an annual probability on the order of 10^{-6} - 10^{-7} per year for a surface displacement of any size beneath the reactor building. Lic. Ex. 1 at 72-79; Lic. Ex. 10.

55. In order to determine the effects of reasonable changes in the assumptions in the GE model, the NRC Staff requested additional analyses by GE. Tr. 1811-12. Because the initial model assumed that a new fault could occur at random at any location between the existing shears, and that the timing of the event would be random, the Staff requested that a new model be developed to test the validity of the random time assumption or "Poisson" model. Tr. 453-60, 1811-12; Lic. Ex. 14. GE developed a more complex model which used a "hazard-increasing function," under which the likelihood of a shear between the existing shears increased as a function of time. Tr. 462, 1811-12; Lic. Ex. 1 at 79-82; Lic. Ex. 14. In other words, as the time since the last earthquake increases, the likelihood of another earthquake occurring increases. Further, the NRC Staff requested substantial sensitivity analyses under which the geologic input parameters were varied and the results analyzed to determine the effect of variations in geologic parameters. Lic. Ex. 1 at 79-82; Tr. 1811-12; Lic. Ex. 16. The hazard-increasing function model increased the risks predicted by the Poisson model by less than ten times. Lic. Ex. 1 at 79-82; Lic. Ex. 10; Lic. Ex. 14. The best estimate probability was about 10^{-6} per year, with values ranging up to 7.2×10^{-6} per year. Lic. Ex. 1 at 81; Lic. Ex. 14. The sensitivity analyses indicated that in order to achieve a probability greater than 10^{-5} per year, it was necessary to select unrealistic values of geological input parameters (e.g., soil ages younger than any which the geological experts would support). Lic. Ex. 1 at 82-83. Thus, an absolute upper bound on the annual probability of a surface displacement of any size beneath the reactor foundation would be 10^{-4} per year. Lic. Ex. 1 at 82-83; Lic. Ex. 16; Tr. 1812.

56. In order to provide an additional, independent assessment of the GE probability analysis, the NRC requested that the LLL and its consultant, the TERA Corp., develop a probability analysis using different methods. Tr. 1802-3.

57. TERA's analysis, concurred in by LLL, concluded that the probability of occurrence of a 1-meter offset on the main Verona fault zone is about 5×10^{-5} per year. Bernreuter, ff. Tr. 1801 at 2. This calculated probability was not determined by relying on historical seismicity data, which itself provides an indication of that occurrence relationship, but instead relied on a slip rate based on inferred occurrence of earthquakes on a fault. This earthquake occurrence model resulted in the first of four conditional probabilities which when multiplied together result in the probability surface rupture beneath the GETR. Rather than using the slip rate from trenches B-1, B-2, and B-3, TERA and LLL independently calculated the slip rate, using the topographical expression between the Vallecitos hills and the valley in which the test reactor sits. The actual measurements taken from the trenches were used as an independent qualitative check on the results of the LLL/TERA analysis. Tr. 1803-4. This strain rate, used in the modelling, was more conservative than the actual measured strain rate taken from offsets in the trenches. Cf. Tr. 1822 with Stip. para. 2a.

58. A second conditional probability was then calculated to determine, given the occurrence of an earthquake, what the likelihood would be of that earthquake-fault rupturing the surface. A third conditional probability was calculated to produce the likelihood, given an earthquake of a given size rupturing at the surface, of the fault at the surface rupturing by the GETR facility. The fourth conditional probability was calculated to determine, given the above conditions, what the likelihood was of a displacement being experienced at that point on the fault. LLL/TERA multiplied all of these conditional probabilities together, yielding the likelihood of various size displacements occurring on a postulated Verona fault. Tr. 1804-5.

59. At this point, LLL/TERA applied two steps to determine the likelihood of displacements beneath the reactor. The first one was to determine the conditional probability of a geometric argument, the distance between the shears in trenches B-1/B-3 and B-2 compared with the size of the foundation. Tr. 1805. This step would reduce the probability of 5×10^{-5} per year by a factor of 0.06 for the estimate that the offset will occur beneath the reactor. *Ibid.*; Bernreuter, ff. Tr. 1801 at 2. A final step was then taken which was Bayesian in approach. This step was to take account of the fact that no shears had been observed between the shears represented in trenches B-1/B-3 and B-2 for a given period of time. This last factor would reduce the probability of exceeding a 1 meter displacement beneath the reactor to the order of 10^{-6} to 10^{-8} per year. Tr. 1806. All calculations up to the final step would be classical statistical analysis, as opposed to Bayesian analysis. Tr. 1805. The conclusion of the LLL/TERA report is that the probability of faulting beneath the GETR is very low, and the use of a mean plus 1 standard deviation value of 1 meter for net offset beneath the facility can be considered conservative. Bernreuter, ff. Tr. 1801 at 2.

60. The Intervenors presented testimony by Professor Brillinger in regard to the GE probability analyses. Professor Brillinger's basic criticisms of the GE probability analyses were: a) a single value of probability was calculated without providing a range of values or estimate of the influence of parametric variations (Int. Ex. 5 at 5); b) GE's modelling assumptions using Bayesian techniques (*Id.* at 3); and c) the geometry of the problem was not expressed in three dimensions (*Ibid.*).¹⁸

61. Professor Brillinger provided a list of documents that he had reviewed in connection with the GETR probability analyses. Although his criticism emphasized the fact that GE had attempted to calculate a single number without examining the effect of parametric variations, he conceded that he could not claim to have reviewed all of the relevant analyses. Int. Ex. 6; Tr. 783-85. In fact, he had not reviewed the extensive parametric sensitivity analyses, which were requested of GE by the NRC. Compare Int. Ex. 6 with Lic. Ex. 16; Tr. 1811-12; Lic. Ex. 1 at 81-83. These analyses showed that reasonable parametric variations will yield a maximum increase in probability of one order of magnitude. At the extremes of reasonable parametric variations, GE's analysis shows an annual probability of less than 10^{-5} per year. Lic. Ex. 1 at 81; Lic. Ex. 16.

62. Professor Brillinger was critical of the modelling techniques employed in GE's analysis. Professor Brillinger preferred "classical" statistical techniques to Bayesian techniques, inasmuch as Bayesian techniques require the application of judgment. Int. Ex. 5 at 5; Tr. 721-24. Bayesian techniques would require a smart analyst and correct judgment to yield meaningful results. Tr. 722-23. Professor Brillinger believed that the use of Bayesian techniques and judgment fight against the natural role of the statistician. Tr. 723-24, 804-6. However, in making difficult judgments inherent in nuclear safety one must employ the information at hand. Tr. 464-65. Bayesian techniques can be used and have been used in NRC regulatory practice for making probability assessments. Tr. 788-89, 1813-14. Bayesian techniques can provide meaningful results if, as in this case, they are accompanied by sensitivity analyses which quantify the judgmental factors. Tr. 1813-14.¹⁹ In any event, probability assessments are not the sole basis for decision-making, but

¹⁸ Professor Brillinger did not perform any independent analyses nor was he able to estimate the significance or effect of any of his criticisms. Tr. 811-13.

Although Professor Brillinger questioned whether it was appropriate to employ conservative assumption at each juncture in the probability analyses, he nevertheless agreed that conservative assumptions, such as those used by GE, would tend to overestimate the probability of a surface displacement. Tr. 712-14. Moreover, when asked, Professor Brillinger could not provide any specific instances, applicable to the GETR analyses, where the use of conservative assumptions would produce a non-conservative result. *Ibid.* Professor Brillinger indicated that he had reviewed the reports in the manner which he would employ for review of an academic journal article. He was interested in raising questions, and did not seek to provide answers. Tr. 811-13. He could provide no specific information which would indicate that restart of the GETR would be unsafe. Tr. 833-35.

¹⁹ Professor Brillinger was not aware of, and had not reviewed, the sensitivity analyses.

serve as an additional tool with which one can supplement deterministic and judgmental decision-making. Tr. 1352-59, 1801, 1822.²⁰

63. Professor Brillinger expressed his view that the probability analysis should have used a three-dimensional geometric model. Int. Ex. 5 at 3; Tr. 790-1. However, he did not know whether this would have significantly affected the results of the analysis. Tr. 819-20. In fact, the results of the analyses would differ by a factor of 2 or less if a multidimensional model were employed. Tr. 1863-65. In the context of probability analyses, which are qualified by accuracies of plus or minus a factor of 10, this effect would not seem significant. Tr. 1869.

64. The more significant perspective on the probability analyses is that both the GE models and TERA models establish an absolute upper bound of 10^{-4} per year. Indeed, TERA's model calculates a probability of 10^{-4} per year for a 1-meter offset anywhere on the site. Tr. 1820-21, 1844-45. If one then assumes that a fault exists under the reactor,²¹ or simply assigns a probability of 1 to a 1-meter surface displacement under the reactor, then the probability of a future 1-meter offset under the foundation would be 10^{-4} per year. Tr. 1819-21. This quantifiable lower likelihood of fault rupture confirms the conservatism of the NRC's surface displacement design basis. The Staff normally requires that a given natural event be part of design bases if the probability of that event is 10^{-4} per year or greater. Tr. 1669. Significantly, there are events for nuclear power plants involving core melt with annual probabilities on the order of 10^{-4} per year. Tr. 1821. In the case of GETR, the upper bound probability of 10^{-4} per year applies to the initiating event only, and not the multiplicity of unlikely additional events which must occur to cause core melt. Therefore, the conclusion following from the probability analyses is that 1-meter surface displacement as a design basis is conservative.

5. Consideration of Subgrade Rupture Mechanism

65. A final conservatism in the Staff's proposed design basis is the consideration of surface offset even though geotechnical engineering considerations indicate that a fault will deflect around the reactor.

66. The Licensee presented testimony to the effect that, based on its analysis, the postulated Verona fault would not surface beneath the GETR, but rather would deflect around it. Lic. Ex. 1 at 84-94; Lic. Ex. 20. The Staff had reviewed the

²⁰ Professor Brillinger conceded that the GETR decision must ultimately involve subjective risk judgment (Tr. 804-6) and that it is useful and reasonable to use probability studies to supplement a deterministic or empirical finding. Tr. 804-6, 842.

²¹ It should be noted that at the time NRC Staff's May 23, 1980 Safety Evaluation Report was written, it was believed by the Staff and USGS that a fault probably existed under the foundation. See Stf. Ex. 1b at A-16. This fact was perceived as critically affecting the probability analysis, as a reason for not excluding surface displacement as a design basis. Stf. Ex. 1b at A-14. Subsequent investigation reduced the fault under the foundation to a mere possibility or very low likelihood event.

Licensee's analysis and presented testimony which agreed with that analysis. Stf. Ex. 1-D; Pichumani, ff. Tr. 996.

67. The Intervenors offered no direct testimony on the issue of fault deflection.

68. The Licensee testified that, if a fault began beneath the reactor, the irregular loading condition in the soil beneath the reactor will cause deformation and flow of the soil in such a way that the dislocation will bypass the reactor. Lic. Ex. 1 at 92.

69. If the reactor were sitting on hard rock that was subjected to a thrust fault, the reactor would be lifted partially off the ground. *Id.* at 85. Part of the foundation would be suspended without support, a cantilever condition, and a relatively severe load imposed on the foundation. *Id.* at 86. If, however, the reactor was on soft mud or loose sand, the fault would not lift the reactor. Tr. 238. The soil would deform or flow in such a way that the fault would bypass the reactor. Lic. Ex. 1 at 86-87.

70. The soil beneath the GETR is neither hard rock nor soft mud but something in between. Tr. 239. The base of the GETR foundation mat, which is located about 20 feet below grade, is underlain by very dense clayey sand and gravel with occasional layers of very dense sandy and/or gravelly clay to a depth of 70 feet. Groundwater levels were shown to vary from 20 to 28 feet below plant grade. Stip. para. m.

71. GE's stability analysis visualizes that the thrust fault forms a passive Rankine wedge of soil that is pushed by a major principal stress. Pichumani, ff. Tr. 996 at 5. The inputs to the calculations are the weight of the soil, the strength properties of the soil, the location of the groundwater table and the weight of the reactor. The principal special condition that exists at GETR is the weight of the reactor, which is 4,000 lbs. per square foot. Tr. 2289.

72. The structural mechanics of a thrust fault can be simulated by applying a force to a block of soil. This vise-like squeezing will eventually cause a failure along a thrust fault. Lic. Ex. 1 at 91. Using a computer, the force for hundreds of possible failure planes was calculated. The force required to cause a failure plane that breaks ground directly beneath the reactor is always higher than the force required to cause a failure outside the reactor. *Id.* at 92.

73. GE concluded that the results of its computer analyses show that given the GETR foundation loads and dimensions, and the soil conditions known to exist to depths of 70 feet or more beneath the structure, faults beneath the GETR will be deflected in such a way that ground movement would occur outside of the perimeter of the reactor. Lic. Ex. 20 at 9.

74. The Staff testified that GE's method of wedge analysis is based on sound soil mechanics principles that have been accepted and applied by foundation engineers in the design of earth-retaining structures. Pichumani, ff. Tr. 996 at 5. He testified that he was aware of one instance where a fault deflected around a

massive structure, the Banco Central in Nicaragua. Tr. 1610. None of the members of the Staff's geology/seismology panel had observed a fault deflecting around a structure. Tr. 1612-14. However, Dr. Pichumani stated that all that fault movement means is a failure plane forms and the problem becomes the same as any other slope stability problem, types of which have been observed and analyzed many times before. Tr. 1637. The weight of the GETR structure, 8,000 tons, is the main consideration. Tr. 1641. The Licensee and the Staff noted that the conclusions reached by this analysis are specific to the conditions at the GETR. In the case of a lighter structure with the same soil conditions, the fault may not be deflected. Tr. 1640-1641; Lic. Ex. 1 at 92, 93.

75. The Staff checked a few of GE's parametric calculations and found them to be correct. Pichumani, ff. Tr. 996 at 6. The Staff performed additional calculations for an assumed wedge depth of 100 feet using similar soil conditions and got similar results for the 21 foot surcharge load. Staff Ex. 1-D at 4. The Staff would be concerned about the stability of the GETR structure if 6 or 7 feet of overburden were removed. Tr. 1668.

76. An independent check of GE's conclusion was made by the Staff by performing a similar static stability analysis using a three-dimensional wedge. The results of this analysis confirmed GE's conclusion that the postulated thrust fault plane will be deflected away from the base of the reactor slab. Pichumani, ff. Tr. 996 at 6, 7. Accordingly, the Board agrees that the assumption of surface offset occurring beneath the GETR is conservative in light of the above geotechnical engineering considerations.

D. Appropriate Geologic Design Bases

77. A surface offset design value of 1 meter beneath the GETR is appropriate when placed in context of the total information presented in this proceeding. All witnesses who testified believed it to be the appropriate design value for surface offset beneath the GETR. Justus and Jackson, ff. Tr. 996 at 8-11; Slemmons, ff. Tr. 996 at 3; Newmark and Hall, Staff Ex. 1-B, App. A at 5; Bernreuter, ff. Tr. 1801 at 2; Vesely, ff. Tr. 1801 at 3; and Harding, Jahns, and Reed, Lic. Ex. 1 at 2, 58, 68, and 84.

78. The following geologic design parameters required by the Staff and pertinent to Issue 1 are appropriate: the outcrop width of the Verona fault zone at GETR be taken as at least 2200 feet; the Verona fault splays existing or which may develop be assumed to vary in dip from 10-45 degrees, to have reverse-oblique net slip character, and to slip co-seismically and simultaneously with strong ground motion. *See* Stf. Ex. 1-B, Section A at 5, 6.

79. Furthermore, to the extent that a seismic event could trigger a landslide near the GETR, the hazard from such an event has been adequately considered by

the Staff and Licensee and was not in dispute in this proceeding. The parties have stipulated that: 1) the procedure used to assess landslide stability is appropriate; 2) the investigations regarding landslides meet 10 CFR Part 100 and the applicable NRC standard review plan section; 3) a 1-meter slope displacement is conservative, and 4) such slope displacements need only be considered to occur near the toe of the slope, at some distance from the GETR, and therefore need be considered in the design of safety related equipment located in that area such as the fuel flooding system piping, but need not be considered in the design of the GETR reactor structure. Stip. paras. 1-4, contained in Staff counsel letter to the Board dated May 22, 1981. These conclusions are adequately supported by the record (Stf. Ex. 1-C, Part I). A 1-meter slope displacement near the toe of the slope is an appropriate and conservative geologic design basis for this proceeding.

E. Vibratory Ground Motion

1. Determination of Seismic Design Bases

80. The development of a seismic design value for a facility such as the GETR involves two basic steps: The first, involving the seismologist, requires the development of a controlling earthquake for the site in terms of its expected maximum magnitude and peak instrumental acceleration. The second step, involving the earthquake engineer, involves the conversion of the peak instrumental acceleration values into effective accelerations, or ground motions which the structure is actually expected to experience.

2. Design Basis Earthquake

81. As indicated previously, the GETR site is located in a complex fault environment 2 to 3 km east of the Calaveras fault within the Verona fault zone and within 3 km of the Las Positas fault. The regional seismicity was studied by Ellsworth and Marks, whose report was received into evidence as App. C to Stf. Ex. 1-B.

82. The potential earthquake sources that are important in assessing the vibratory ground motion hazard at the GETR site are the Calaveras fault and the Verona fault. Stf. Ex. 1-A at 30; Stip. para. 2k. Of the two, the Calaveras fault has the greater potential for generating strong vibratory ground motion at the GETR site. The parties have stipulated that a magnitude 7 to 7.5 event could be associated with this fault system. Stip. paras. 2k, r; Tr. 695. This value is supported by the testimony of Staff and Licensee seismologists. Devine, ff. Tr. 996 at 3; Tr. 681-82. It is well established that faults which are branches of and subsidiary to the San Andreas fault have the potential for generating earthquakes ranging up to a

maximum of magnitude 7.5. Stip. para. 2.1. A larger earthquake (magnitude 8 to 8.5) could occur on the main San Andreas fault, but due to its distance from the GETR site, approximately 50 km, such an event would result in less vibratory ground motion at the site than would be caused by the potential events from the Calaveras or Verona fault. Stf. Ex. 1-A at 30.

83. The parties have also stipulated to the expected maximum magnitude event associated with the Verona fault, a value of M6 to 6.5. Stip. para. 2k. This value is also adequately supported by the record. Licensee witness Dr. Kovach presented a correlation of fault area (area along the fault plane at depth) with magnitude for worldwide data in order to estimate the expected magnitude for the Verona fault. Lic. Ex. 21 at 14-16. This correlation yielded magnitudes ranging from 5.8 up to 6.3, with a most likely value of 6.1. For the stipulated fault length of 12 km, Dr. Kovach's estimate would be a magnitude of 6.0 or slightly less. Lic. Ex. 21 at 16.

84. Dr. Slemmons presented independently derived correlations of fault length, surface offset, and magnitude for a range of conditions which one might associate with the Verona fault. These analyses showed that for a 12 km length, one can expect a magnitude ranging between 6 to 6.5. Tr. 1187; Slemmons, ff. Tr. 996 at 3; Stf. Ex. 1-B, App. E. Mr. Devine, the Assistant Director of Engineering Geology for the USGS, also agreed with the use of 6 to 6.5 magnitude for the Verona fault. Devine, ff. Tr. 996 at 3.

85. As noted previously, there was speculation on the part of Drs. Brabb and Herd that the Verona fault could be connected with the Las Positas fault. However, if the Verona fault were connected with the Las Positas fault, the additional 15 km length added by the strike-slip Las Positas fault would still not produce an estimated magnitude which would exceed 6.5 by more than one tenth of an order of magnitude. Tr. 1584-86. This is because the fault length is not a very sensitive parameter when estimating magnitude based on the area of a fault. For example, a change of fault area of 50% or so would have only a minor impact on the estimate of magnitude for the fault. Tr. 1574. Dr. Kovach's correlations show that for an increase in length of a factor of 2, one might expect an increase in magnitude of 0.3. Lic. Ex. 21 at 16.

3. Peak Free-Field Acceleration

86. The maximum vibratory ground motion that could be associated with events on the Calaveras and Verona faults was described for the Staff by Mr. Devine, as follows:

Maximum vibratory ground motion at the GETR site would result from a magnitude 7 to 7.5 earthquake centered on the sector of the Calaveras fault nearest the site, with acceleration peaks at the free-field surface (*i.e.*, without incorporating factors dependent on soil-structure interaction or

behavior of the structure) which could be slightly in excess of 1g. The horizontal vibratory ground motion at the GETR site resulting from an earthquake of magnitude 6 to 6.5 centered on the Verona fault could contain acceleration peaks as high as 1g, but the overall level and duration of shaking would be less than that expected from the Calaveras fault. Devine, ff. Tr. 996 at 3.

87. GE presented testimony in which the peak instrumental values for relevant earthquake records were discussed and analyzed. Dr. Kovach developed a correlation of peak instrumental acceleration with distance data from the 1979 Imperial Valley and 1979 Coyote Lake earthquake records. He then tested this correlation against maximum peak instrumental acceleration data for seven earthquakes ranging in magnitude from 7 through 7.7. Based upon this correlation, he determined that for the GETR site, expected values of peak instrumental accelerations would range from 0.58g to 0.74g for a magnitude 7 to 7.5 event on the Calaveras fault. He concluded that expected accelerations would range up to about 0.4g for a 6 to 6.5 event on the Verona fault. Lic. Ex. 17-22; Tr. 593-96.

88. In response to Intervenors' questioning, Licensee and Staff witnesses indicated that they had not used all peak acceleration values instrumentally recorded during the 1971 San Fernando event at the Pacoima Dam, or the 1979 Imperial Valley earthquake. See Tr. 675-79, 1020-21, 1671-74. However, the site conditions at the Pacoima Dam were unique. The accelerometer which recorded the high peak acceleration value at Pacoima Dam was located on a steep ridge which runs up to the abutment of the dam, which had the effect of concentrating energy and amplifying the recorded acceleration. Lic. Ex. 21 at 22; Tr. 2003-5. No such ridge exists at the GETR site, nor is there any geological analog at the site. The GETR site is underlain by dense, stable Livermore gravel which would not exhibit any tendency to amplify vibratory ground motion in any manner resembling the Pacoima Dam conditions. Lic. Ex. 21 at 22; Tr. 1596, 2003-5.

89. Dr. William Hall presented a comparison of the Regulatory Guide 1.60 response spectrum to the earthquake record for the Pacoima Dam site. His comparison shows that the Regulatory Guide 1.60 spectrum, when anchored to 0.75g effective, exceeds the Pacoima Dam record in all cases except for several short duration, high frequency peaks, which would not affect the structure of a nuclear power plant. Significantly, in spite of peak accelerations in excess of 1.2g, there was no significant damage observed at the Pacoima Dam site. Tr. 1713-15.

90. The Intervenors argued that the 1.74g vertical acceleration recorded at Station 6 during the Imperial Valley 1979 event was relevant. This data point was the product of peculiar site conditions which do not exist at the GETR site. The Imperial Valley Station 6 was located in a wedge of ground in close proximity to the intersection of two fault rupture locations. This tended to amplify the vertical throw and the corresponding vertical accelerations. Lic. Ex. 21 at 22-23; Tr. 1020, 1588-911, 2001-2. In addition, the soil/sediment conditions in the Imperial Valley

bear directly on the observed accelerations. The Imperial Valley site is underlain by thick alluvium. This produced steep velocity gradients at the approach to the surface, which tended to amplify the vertical motion. Tr. 526-7; Lic. Ex. 42; Tr. 2001-3. Neither of these conditions found at Imperial Valley is found at the GETR site. The GETR is not located on a wedgelike portion of ground situated in close proximity to the junction of two fault ruptures. Tr. 2003. Moreover, the GETR site is not characterized by the presence of deep alluvial sediments. The GETR site is underlain at depth by dense Livermore gravels, and the high velocity gradients which contributed to the high vertical accelerations at Imperial Valley Station 6 cannot be expected at GETR. Stip. paras. 2m, n; Tr. 1596, 1997-98.

91. Finally, the high vertical acceleration recorded at Station 6 occurred at frequencies in excess of 10 hertz and was the result of a single peak of acceleration, rather than sustained ground motion. Tr. 1020, 2003. This latter point is important, since such high frequency, single-peak accelerations do not result in damage to a structure such as the GETR. *Ibid*; see also, Tr. 2007-8.

92. Similarly, a 1.3g vertical acceleration observed at the Gazli, USSR earthquake was caused by unusual site conditions leading to high velocity gradients and the GETR site geology would not lead to comparable amplification. Tr. 690-95, 1997-98, 2005-6.

93. Intervenors questioned the Licensee witnesses about USGS Report 81-365 and its effect on correlating acceleration values with earthquake magnitude. Tr. 621, 634; see also, Int. Find. 3, 6. However, Mr. Devine of the USGS testified that this report was supportive of his conclusion that the appropriate peak accelerations at the GETR associated with magnitude 7.5 and 6.5 events on the Calaveras and Verona faults, respectively, would be slightly in excess of 1g and as high as 1g, respectively. Devine, ff. Tr. 996 at 3.

94. The Intervenors also questioned, on the basis of the Imperial Valley earthquake record data points, whether it is conservative to specify vertical accelerations as $\frac{2}{3}$ of the horizontal accelerations, pointing to a few data points where vertical accelerations exceeded this ratio. The Licensee and Staff witnesses agreed that the relevant data show that, after anomalous readings are eliminated, it is appropriate to treat vertical accelerations as $\frac{2}{3}$ the amount for the horizontals. Tr. 524-26, 1647-49, 1718-19, 2007-8, 2030-32. Significantly, the few instances where verticals do exceed horizontals are generally characterized as involving frequencies of oscillations in the upper end of the scale, which are not of concern to structures. *Ibid*; see also Tr. 1725.

95. An additional significant factor is that buildings in general are inherently strong in the vertical direction, and the rigid massive structures involved in nuclear power plants are relatively insensitive to vertical loadings. Tr. 699-70, 2082-89. Vertical loadings account for an insignificant fraction of the total loads placed on a nuclear power plant structure under design basis seismic conditions. Tr. 2082-89,

1727. It seems clear that the Staff's use of vertical accelerations $\frac{2}{3}$ of the size of the horizontal accelerations is well supported by the evidence.

96. Finally, the Intervenors questioned whether seismic focusing or directivity could result in amplification of accelerations at the GETR site, apparently referring to a paper published by Dr. Bolt concerning the Livermore/Greenville earthquake sequence. Tr. 575-78 (Questioning by Barlow). At the Intervenors' urging, GE produced Dr. Bolt as a witness. See Tr. 1991-2076. Dr. Bolt testified that the phenomenon of seismic focusing is part of every earthquake, and therefore is part of the data base and cannot be separated from it but that its significance in terms of effects may be quite small. *Ibid*; Tr. 2001. Dr. Kovach and Mr. Devine agreed that the effects of focusing are included in the existing earthquake data base from which the criteria for vibratory ground motion for the GETR are derived. Tr. 697, 1021. Further, although focusing could have had a role in causing the results which occurred at Livermore, it is unlikely that the observations of the Livermore earthquakes of 1980 would apply to the GETR site. The Livermore site was characterized by deep layers of soft alluvium, while the GETR site is characterized at depth by dense Livermore gravels, which would not enhance the intensity of the ground motion as would conditions at Livermore. Tr. 1993-98.

97. In conclusion, on the basis of the record as a whole, and giving due consideration to the Intervenors' concerns raised during cross-examination, it is reasonably conservative to factor into the seismic design basis for the GETR the following maximum effects from earthquakes: peak horizontal accelerations at the free-field surface slightly in excess of $1g$ from the Calaveras fault, and up to $1g$ peaks from the Verona, with vertical accelerations $\frac{2}{3}$ of those values.

4. Effective Acceleration

98. Since the peak instrumental accelerations analyzed by the seismologist may not be directly applicable to structural analysis, the earthquake engineers must analyze the data provided to them in order to develop a set of structural design parameters. Tr. 1698, 2158-60. The two principal design parameters are: a) a "response spectrum," and b) an "effective acceleration," to which the response spectrum was anchored. The "response spectrum" is a plot of the responses of a number of simple damped oscillators, having various frequencies in terms of the acceleration of the mass, the relative velocity, and the relative displacement. Tr. 1708-9; see Stf. Ex. 8. The response spectrum prescribed for the GETR was Regulatory Guide 1.60, which was derived from a statistical compilation of historic earthquake ground motion records, and envelopes the mean plus one standard deviation of the data from those records. Tr. 1677, 1711-13.

99. Drs. Newmark and Hall selected the Regulatory Guide 1.60 response spectrum to characterize, as a function of frequency, the response velocities, displacements, and accelerations for use in the structural analysis. Stf. Ex. 1-B,

App. A at 2, 3. In recognition that structural response and damage potential is related to repeated motions of strong energy content, and considering the Staff recommendation of peak instrumental accelerations, they recommended acceleration values of 0.75g effective and 0.6g effective as conservative anchor points for locating the response spectrum for events correlated with the Calaveras and Verona faults, respectively. Stf. Ex. 1-C, App. A, report of September 29, 1980 at 6-8; Hall, ff. Tr. 1680 at 5.

100. Effective acceleration was defined by Dr. Hall, quoting from Dr. Nathan Newmark, as:

that acceleration which is most closely related to structural response and to damage potential of an earthquake. It differs from and is less than the peak free-field acceleration. It is a function of the size of the loaded area, the frequency content of the excitation, which in turn depends on the closeness to the source of the earthquake, and to the weight, embedment, and stiffness of the structure and its foundation. Hall, ff. Tr. 1680 at 40.

101. Their analysis indicated that 0.6g and 0.4g would represent acceptable values for effective acceleration associated with events on the Calaveras and Verona faults, respectively. Stf. Ex. 1-B, App. A at 5; Stf. Ex. 1-C, App. A at 8. They added an additional margin of conservatism to each of these values when they chose the values of 0.75g effective and 0.6g effective for the Calaveras and Verona faults, respectively. In order to account for greater uncertainty in the geological and seismological base of information for the Verona fault, and because of the use of magnitude 6.5 value for an earthquake on this fault, they added a greater margin of conservatism to their choice of an acceleration value for the Verona. *Ibid.* The Staff specified that these horizontal accelerations represented by the Regulatory Guide 1.60 response spectrum should be multiplied by a factor of two-thirds to obtain the appropriate values for vertical accelerations for design purposes. Tr. 2258-59.

102. In selecting the anchor point, the amplitude of peak instrumental accelerations is not the sole parameter of interest to the earthquake engineer. Single high frequency, high amplitude peak instrumental acceleration values identified by the seismologist are not useful indicators of damage potential and structural response resulting from vibratory ground motion. The earthquake engineer will consider the frequency and duration of these peaks in light of the characteristics of the structure. High frequency, short duration instrumental peaks such as those observed during the 1971 San Fernando earthquake, will not significantly affect the characteristically massive structures associated with nuclear reactors. Tr. 1714-15, 1725, 1740-41.

103. In this sense, then, in accordance with the definition given by Dr. Newmark, the effective acceleration normally is not that value connected with the high spikes of instrumentally recorded high frequency accelerations commonly found to occur close to the source of seismic energy release, such as in the case

with GETR with respect to the Verona and Calaveras faults. Rather, the effective acceleration would be expected to be very close to the peak instrumental acceleration for locations at significant distances from the source, zones where such high frequency acceleration peaks normally are not encountered. Accordingly, for design purposes, the effective acceleration value is used to anchor the design response spectrum. Hall, ff. Tr. 1680 at 5; *see also* Tr. 2158-63.

104. Two points of perspective on the severity of the design basis response spectra warrant particular emphasis. First, the accelerations prescribed by the Regulatory Guide 1.60 response spectra are more than eight times higher than those prescribed by the Uniform Building Code for emergency facilities. Tr. 1716-18. Second, it is unrealistic to require a more stringent basis for design than the 0.75g effective/Regulatory Guide 1.60 design basis prescribed by the Staff for the Calaveras fault. Even in the vicinity of the largest fault on the West Coast, the San Andreas fault, the use of a 0.8g/Regulatory Guide 1.60 spectrum would be a reasonably conservative design basis. Stf. Ex. 1-C, App. A at 8.

105. Moreover, the Staff recommended that the maximum vibratory ground motion associated with a 6-6.5 event on the Verona fault should be combined co-seismically with the 1-meter surface displacement design basis. Stf. Ex. 1-B at C-6. The latter design basis is a suitably conservative criterion.

106. Intervenors did not present any affirmative evidence on the matter of earthquake engineering, nor did they draw into serious question any of the Staff-recommended seismic design bases.

ISSUE TWO: Whether the Design of GETR Structures, Systems and Components Important to Safety Requires Modification Considering the Seismic Design Bases Determined in Issue One Above, and If So Whether Any Modification(s) Can Be Made So That GETR Structures, Systems and Components Important to Safety Can Remain Functional In Light of the Design Bases Determined In Issue One Above.

A. Facility Description

107. The GETR is a high-flux, pressurized water reactor which operates at a maximum power of 50 MW thermal. Pressure is maintained in the pressurizer by nitrogen gas. The reactor core is contained in a 2-foot diameter cylindrical pressure vessel positioned on the bottom of a 9-foot diameter pool. The pool is flooded with demineralized water to a level 11 feet above the top of the reactor vessel or 23 feet above the core. Demineralized water is pumped through the reactor vessel and out to heat exchangers for cooling. Coolant enters the pressure vessel near the top of the reactor vessel via two 12-inch diameter inlet pipes, flows downward through the core and out near the bottom via two 12-inch-diameter outlet pipes. The reactor

coolant operates at a maximum temperature of 180 degrees F and maximum pressure of 150 psig. The coolant is subcooled at atmospheric pressure. Stf. Ex. 1-C at A-1; Lic. Ex. 22 at 2-6.

108. The reactor does not product electricity, and dissipates the heat produced through coolant towers. It operates at a stable steady-state power level without any load demand changes. Lic. Ex. 22 at 3.

109. The reactor, primary coolant system, irradiated fuel storage facility, experimental facilities and miscellaneous reactor auxiliary systems are housed in a reinforced concrete structure located in a steel containment building. The structure is of heavy, massive construction. The foundation mat is 4'8" thick. The vertical walls that make up the sides of the concrete core structures are 6'6" thick. Tr. 1912.

110. The reactor core contains square cross-section fuel elements, filler pieces, and six bottom-mounted, top-entry control rods arranged in a close-packed square array. Experiment capsules may be positioned in the filler pieces to utilize the high core neutron flux. The number and position of fuel and filler pieces are adjusted as necessary to achieve the appropriate reactivity balance and flux distribution. Surrounding the square array, appropriately shaped beryllium and aluminum peripheral pieces round the core into a 2-foot diameter, 3-foot high cylinder. Lic. Ex. 22 at 8.

111. The six individually actuated combination control rod and fuel follower assemblies are each separated from the other by at least one lattice unit. Shutdown or scram action permits the simultaneous drop of all control rods by gravity with primary coolant assist. The fuel follower section drops out of the core and the poison section enters the core. Any combination of five control rods provides a minimum shutdown margin of at least 1% $\Delta k/k$ under all reactor loading or operating conditions. For the normal core, which contains an equilibrium xenon concentration and partly burned fuel, either center rod or any combination of three or more rods is sufficient to ensure lasting subcriticality. Lic. Ex. 22 at 9.

112. A storage facility (canal) for irradiated fuel is located adjacent to the pool and is also within the massive concrete shielding structure. The canal is filled with high purity demineralized water. Canal gates, which normally separate the pool and canal, are removed during shutdown to facilitate refueling. The irradiated fuel is stored in leaktight fuel storage tanks located in the bottom of the canal. The canal water is circulated through a separate heat exchanger system to remove residual heat from the stored fuel. Lic. Ex. 22 at 9.

113. A domed, cylindrical steel containment building encloses the reactor, pool, adjacent fuel storage canal, shielding, heat exchangers, primary pump, and reactor servicing and experiment areas. The containment building extends approximately 90 feet above ground and 20 feet below ground surface; the diameter is 66 feet. Containment building penetrations permit secondary coolant water to be pumped from the primary, pool and canal system heat exchangers to the cooling

tower. Control and instrument penetrations permit reactor control and experiment instrumentation to be monitored in the adjacent reactor control room. Lic. Ex. 22 at 13.

B. Operation of Reactor Cooling System Following Scram/Shutdown

114. A natural convection cooling system provides backup cooling for the reactor under certain emergency conditions and also during normal shutdown periods. In the event of high reactor inlet temperature, low reactor differential pressure, low primary cooling flow or seismic switch trip, the reactor scrams and an emergency cooling trip signal causes four valves to open the primary system to the reactor pool. A pneumatically reset, solenoid-tripped, spring-to-open, emergency cooling valve is provided on each leg of the two primary inlet cooling lines. In each of the primary coolant outlet lines in the reactor pool, check valves (installed vertically) open due to gravity when the primary system is depressurized. If the primary pump continues to run, approximately 33% of the primary flow is bypassed to and from the pool with the cooler water from the pool mixing with the primary system. If the primary pump stops, the flow through the reactor reverses in a short interval and natural convection cooling circulates from the pool through the open check valves up through the core and back to the pool via the emergency cooling valves. The residual heat from the relatively small mass of the core and structure can easily be removed following shutdown or scram so long as makeup water is available (normally supplied from the pool via the vertical check valves into the bottom of the core). No electrical energy is required to maintain a safe shutdown status for an extended period. Lic. Ex. 22 at 11, 13, 14. The decay heat load for the GETR is about 2% of a modern power reactor. Within 40 hours after shutdown, it is at a level of about 0.1 megawatt thermal. Tr. 1906. As long as the fuel is kept covered with water, the cladding temperature of the fuel will remain low enough to prevent damage by means of heat transfer due to pool boiling. Stf. Ex. 17-C at A-2.

C. Postulated Accident Following Design Basis Event

115. The Board has determined that 1 meter of offset coupled with 0.6g effective acceleration for an event on the Verona fault, as well as a 0.75g effective acceleration for an event on the Calaveras fault with no simultaneous offset, are conservative geologic and seismic design bases.

116. The Licensee considered three steps necessary for providing protection during and following the design basis seismic event:

1. Reactor scram at the onset of the seismic event to terminate the fission heat source.

2. Initial removal of decay heat by boiling/evaporation of the water inventory existing in the reactor pool and fuel storage canal at the onset of the seismic event.
3. Long-term cooling/decay heat removal by providing sufficient makeup water flow to the reactor vessel and fuel storage containers.

Stf. Ex. 1-C at A-1; Lic. Ex. 22 at 16.

117. Based on a review of possible failures resulting from the seismic event for determining reactor cooling requirements, the Staff and the Licensee concluded that the rupture of the primary coolant piping is the most limiting postulated accident to follow from the design basis seismic event. Stf. Ex. 1-C at A-3.

118. The assumptions made for evaluating this postulated accident include:

1. The worst postulated earthquake occurs with reactor trip initiated by the seismic scram system;
2. Simultaneous non-mechanistic rupture of the primary system;
3. Heat transfer and decay heat rates based on 25 day power run of the reactor operating at 50 MW.

Stf. Ex. 1-C at A-2; Lic. Ex. 22 at 16, 17.

119. Results of the analysis of the primary pipe rupture show that water will drain from the reactor vessel and pool through the primary return lines until the water reaches the level of the return line outlet from the reactor vessel (5.5 feet above the fuel). Lic. Ex. 22 at 16, 17; Stf. Ex. 1-C at A-1, A-2. The water level drops to the top of the core at 45 hours after the event, assuming no makeup flow. At that time, the boil-off from decay-heat requires makeup water to the core at a rate of 0.8 gpm. Stf. Ex. 1-C at A-2.

120. The Staff and the Licensee concluded that the cooling water makeup requirements for stored fuel are set by the case which considered a freshly discharged core. The assumptions made for evaluating this fuel storage situation include:

1. The seismic event occurs six hours after shutdown from a 25-day run at 50 MW;
2. The temperature of the canal water is assumed to be 130°F;
3. Heat transfer calculations for the stored fuel are based on decay heating equivalent to an infinite irradiation of a single core at 50 MW with a 6-hour decay prior to the seismic event; and
4. The primary pipe rupture discussed above is assumed to occur due to the seismic event.

Stf. Ex. 1-C at A-2; Lic. Ex. 22 at 19.

121. The results of the analysis show that following approximately 34 hours after shutdown with no makeup, water must be added to the fuel storage canal at a rate of 1.64 gpm to account for boil-off due to decay heat. This makeup flow rate requirement decreases with time. Stf. Ex. 1-C at A-2; Lic. Ex. 22 at 19.

122. Therefore, the total makeup flow requirement for both the core and the canal is 2.44 gpm. Tr. 2249.

D. Structures, Systems and Components Important to Safety

123. The Licensee has identified the systems necessary to shut down GETR, maintain the reactor in a safe shutdown condition and to cool stored fuel, assuming the accident and fuel storage locations discussed above. These systems include new systems, existing systems and existing systems with modifications. The parties have stipulated that all of the safety-related structures, systems and components necessary to shut down the facility and maintain the reactor in a safe shutdown condition during and following the design basis seismic events are identified in Table 1, Section A of Stf. Ex. 1-C. Stip. para. 2q.

124. An amplification and further description of the structures, systems and components identified in Table 1 follows.

125. To assure emergency cooling by natural circulation of pool water or from the proposed Fuel Flooding System, the primary system must be shut down and depressurized. A seismic trip system will scram the reactor, open the emergency cooling valves and isolate the pressurizer at a low seismic activity level of approximately 0.01g peak ground acceleration. The depressurization would be accomplished within one second of seismic scram actuation, prior to any significant seismic load being reached. In the event of a loss of power, the emergency cooling valves fail open and the pressurizer isolation valves fail shut. Stf. Ex. 1-C at A-4.

126. The reactor concrete structure, reactor pressure vessel and the canal fuel storage tanks serve as the containers for fuel cooling water. Integrity of these structures must be maintained to assure that coolant leakage will not exceed that assumed in the analyses (60 gph from reactor pool; 400 gph from storage canal) and, in the case of the reactor concrete structure, that support for other safety-related equipment is retained. Water contained within these structures at the time of the seismic event serves as the initial heat sink for fuel decay heat. Stf. Ex. 1-C at A-4.

127. The canal is separated from the pool by a 3-piece removable gate to allow underwater pool and canal transfers. All irradiated fuel not in the core is stored in racks designed to maintain a subcritical configuration. The racks are inserted in stainless steel tanks. To replace the water removed by boiling, the proposed Fuel Flooding System will supply adequate water flow to the fuel stored in the canal in the event of a seismic event, without operator action. Modifications to the fuel storage tanks include redundant supply line and nozzles for each tank. The nozzles are installed to act as siphon tubes to maintain all tanks at the same level. The reactor pressure vessel supports the core and other internals which must maintain their integrity. Stf. Ex. 1-C at A-4.

128. Control rods must function properly to shut down the reactor and maintain the reactor in a shutdown condition. All systems penetrating the reactor vessel or storage canal, whose failure would provide an unanalyzed coolant leak path, must maintain their integrity. These systems include the pool and vessel drain lines, poison injection lines, capsule coolant system, canal emergency recirculation system, control rod drives and isolation valves associated with these systems. Restraints will be added and valves seismically qualified to assure the necessary integrity. Stf. Ex. 1-C at A-5.

129. A pneumatically closed, spring opened, solenoid-tripped, emergency cooling valve is provided on each of the two primary inlet cooling lines. A check valve is provided on each of two primary outlet cooling lines. On receipt of the seismic trip signal or a loss of power to these valves the emergency cooling valves open the primary system to the reactor pool. System depressurization is assured by closing the primary system pressurizer isolation valves and pressurizer supply valve. Depressurization does not cause flashing and blowdown of the primary system because the coolant is subcooled at atmospheric pressure. Stf. Ex. 1-C at A-5.

130. If a rupture occurs in the primary piping, water will drain from the pool and reactor vessel until the level drops to the level of the anti-siphon valves. Standpipes will be added to the top of the check valves to ensure that the water level in the reactor vessel remains above the core regardless of the water level in the pool. The standpipes serve as the injection points for makeup from the fuel flooding system. Stf. Ex. 1-C at A-5.

131. The fuel flooding system is initiated automatically by the seismic trip described above to provide water to the core and to the fuel storage tanks without operator action. The system will consist of two identical redundant legs each capable of delivering the required flow rate. The required flow rate of 2.44 gpm is the maximum evaporation rate from the irradiated fuel subsequent to postulated canal and pool drainage. Sufficient water is provided for seven days of operation at this flow rate. The reservoirs will be situated on a hill adjacent to the containment building at an elevation to provide adequate gravity feed flow. Each supply leg will approach and penetrate the containment building from a different angle and will be routed to the fuel storage baskets and to one of the standpipes to be installed on the emergency cooling system. The flow control valves are air operated and fail open on loss of air. The solenoid air control valve will vent air pressure from the flow control valve operator on loss of power, making the system fail-safe. Stf. Ex. 1-C at A-5.

132. Testimony was offered and received into the record of this proceeding concerning whether the failure of other equipment during the design seismic event would jeopardize the safety-related equipment.

133. The Licensee proposed additional modifications to ensure that failure of non-safety-related equipment during the seismic event will not affect the capability to safely shut down the reactor. A description of these modifications follows.

1. Modifications to Provide Additional Assurance of Reactor Vessel Integrity

134. The reactor pressure vessel is centered in the pool five feet below the top of the vessel with three restraints. The restraints attach to the side of the pool. Evaluation showed that one of the pins was of inadequate strength, and it was replaced. Lic. Ex. 22 at 24.

135. There are four different kinds of restraints that are or will be installed on the primary piping system to eliminate stress on the reactor vessel, thus assuring its integrity. The first kind strengthens the gusset below the 20-inch elbow connected to the primary pump discharge. A second restraint is a saddle and U-bolt arrangement that provides a vertical restraint for the 14-inch reactor vessel discharge pipe. The third type provides vertical restraint of the right pump discharge pipe and the left heat exchanger inlet pipe where the two run in parallel. It is planned to mount the restraint on the floor of the equipment room. The fourth category of pipe restraints is collars that attach the pipes to the wall. They consist of a clamp around the pipe with an interconnecting strut to a wall bracket. Lic. Ex. 22 at 24, 25.

136. In addition to the large pipe restraints described above, restraints were added to the small diameter piping that is connected to the bottom of the pool and the vessel. Lic. Ex. 22 at 25.

137. Restraints were also added to the primary heat exchanger. Collars were placed around the heat exchanger near its top and center. Struts were installed between the collar and attachment points on the walls. In addition, a restraint is attached to the bolt circle on the bottom of the heat exchanger with struts connecting the restraint with attachment points on the walls. Lic. Ex. 22 at 25.

138. Restraints were placed around the pool heat exchanger so it would not fall into the primary system piping. Standpipes were installed above the emergency cooling check valves so that in the unlikely event of water draining from the pool, water would stay over the core. Lic. Ex. 22 at 25.

2. Modifications to Provide Additional Assurance of Canal Storage Tank Integrity

139. The canal storage tanks are located in the storage canal on the bottom at the end farthest from the pool. A new canal storage tank has been constructed that consists of three leak-tight inner tanks placed in a leak-tight outer tank. There are, thus, two leak-tight containers to assure water will remain over the stored fuel

elements in the unlikely event that water is drained from the canal. The inner tanks are constructed of one-quarter-inch 304 stainless steel, and the outer tanks are of one-half-inch 304 stainless steel. The thick-walled outer container also provides physical protection for the inner tanks. Lic. Ex. 22 at 26.

140. Modifications have also been made to prevent equipment on the third floor from dropping on the canal storage tank or reactor pressure vessel. This missile impact system consists of a series of structural frames that are strategically located on the third floor of the reactor building, and are designed to prevent the overhead crane assembly from impacting either the reactor vessel itself or the fuel storage tanks. The frames are covered with approximately 14 inches of aluminum honeycomb. The function of the honeycomb is to mitigate the postulated impact of the polar crane assembly, and in this way minimize the loads both on the frames and on the floor of the reactor building. Tr. 1919.

3. Accident Analysis of Structures, Systems and Components Important to Safety

141. The scram circuitry is activated by two kinematics triaxial seismic triggers. The three component triggers (two horizontal and one vertical) will replace the existing two component triggers (two horizontal). The sensitivity of these seismic triggers is such that they will initiate trip signals at ground accelerations of 0.01g and are seismically qualified to ground accelerations up to 0.5g. Stf. Ex. 1-C at B-1.

142. The GETR scram system operates when (among other events) the seismic switches close. The reactor control rods are disengaged from the drive mechanism 180 milliseconds after either of these two seismic switches make electrical contact. That is, all the electrical and electronic scram circuitry have operated and the control rod magnetic latch circuit has been interrupted and the control rod begun its drop by the end of 180 millisecond period. The control rod then drops by the forces of gravity and primary coolant flow so as to be fully inserted from a 36-inch withdrawn position within 500 milliseconds from the time the control rod is disengaged from the drive. Based on available rod drop data, it is conservatively estimated that within 300 milliseconds from the time the control rod is disengaged from the 36-inch withdrawal starting position, or 480 milliseconds from seismic switch trip, the control rods will be at, or below, the 12.2-inch withdrawn position whereupon the reactor is considered to be shut down. Stf. Ex. 1-C at B-8, B-9.

143. The emergency cooling power-operated valves, pressurizer valves and fuel flooding system admission valves begin to open and the pressurizer valves begin to close within 190 milliseconds after triggering of the scram system. The remainder of the valve operation is complete within a total of one second from scram seismic trip. Stf. Ex. 1-C at B-9.

144. In order to determine the adequacy of the seismic scram system, with regard to the trigger level (0.01g) and time required to complete the scram action (1 second), the Licensee submitted a study of near-field time histories to the Staff. The main objective of this study was to determine whether consequential horizontal or vertical accelerations would be reached before completion of the scram action. Stf. Ex. 1-C at C-12.

145. The earthquake threat at the GETR site comes from two main sources, strike-slip events (up to magnitude 7.5) on the Calaveras fault 2 km away and thrust events (up to magnitude 6.5) in the immediate vicinity of the plant. Thirty-six sets of records from well recorded events up to surface wave magnitude 6.9 for strike-slip and surface wave magnitude 7.0 for thrust faulting were analyzed. Several sets of accelerograms were recorded at distances less than 1 km from the fault. The data set can be considered a representative sample of all available data in the magnitude and distance range of interest. Envelopes of all horizontal and all vertical accelerations during the first second after recording 0.01 (the seismic trigger level) were computed and plotted. The highest peaks were associated with the Pacoima Dam record from the 1971 San Fernando earthquake. These were 0.13g for the horizontal component recorded 0.66 seconds after reading 0.01g and 0.24g for the vertical component recorded 0.52 seconds after reaching 0.01g. It is the Staff's position that in determining the adequacy of the seismic scram system that high frequency (10 Hz) peaks of this amplitude (approximately 0.25g) could occur anytime during the first second after 0.01g on either, or all, components of motion. Stf. Ex. 1-C at C-12.

146. The Staff testified that, based on the reliability assessment of the scram system, tests performed on the control rods and internal components, and evaluations performed, reasonable assurance is provided that the circuits required to perform automatic actions will function satisfactorily, considering the minor loadings postulated during the first second of the design seismic events. Stf. Ex. 1-C at B-4 to B-9, C-12.

4. Structural Analysis

147. The Staff and Licensee testified that, given the seismic design parameters, only the following structural and mechanical requirements must be satisfied:

1. The structural integrity of the massive concrete structure which supports other systems and components important to safety must be maintained.
2. The structural integrity of the reactor vessel and canal fuel storage tanks must be assured.
3. A source of water, including the associated piping system, must be available after the seismic event to provide water to the spent fuel canal

storage tanks and the reactor pressure vessel to replenish that lost through boil off and evaporation in the process of cooling the fuel. Stf. Ex. 1-C at C-2; Martore, ff. Tr. 2200 at 4; Lic. Ex. 22 at 23-24.

148. Upon questioning by the Board, Staff witness Nelson testified that containment integrity was not required for the design bases seismic event. Containment integrity is required to mitigate the consequences of GETR design bases accidents which involve a core melt. However, the worst accident caused by the seismic event was determined to be a loss-of-coolant accident by the quickest means, the rupture of the primary piping. This loss-of-coolant accident does not involve a core melt. The Staff did not take into account the possibility that there might be first a design-basis accident in which there was a need to rely upon the containment, and subsequently a seismic event which might breach the containment. The Staff testified that there is no need to require that it be postulated that those two very low likelihood events be considered simultaneously for design purposes. Tr. 2212, 2214, 2215, 2230.

149. The Board notes that 10 CFR Part 50, Appendix A, Criterion 2 required the design bases for nuclear power plants to reflect combinations of accident conditions with the effects of natural phenomena, such as earthquakes. The Staff responded that this regulation's applicability is limited to power plants and the GETR is not a power plant. Therefore, this requirement is not applicable to the GETR. See, "NRC Staff's Brief in Support of Certain Conclusions of Law" dated July 31, 1981.

150. The Staff testified that Appendix A should not be used as a guideline in that the GETR differs from nuclear power plants in power level, fission product inventory, seismic scram system, lack of need for complex systems to mitigate accidents and the fact that at operating temperature the GETR is subcooled at atmospheric pressure. Tr. 2229.

151. In addition, the Staff has evaluated the offsite radiological impact associated with the design seismic events. The seismic event is assumed to result in breach of the containment above and below grade. Although the Staff's analysis shows the structural integrity of the pool and canal would be maintained, a release of the radioactive contents of the pool water was assumed in order to provide a bound of the radiological consequences of this event. No fuel failure, and hence no fission product release from the fuel, was postulated. It was postulated that all five test capsules would fail, thereby releasing the fission products which could have accumulated with the capsules. Stf. Ex. 1-C at D-1.

152. The offsite radiological consequences resulting from this postulated release are only fractions of the 10 CFR Part 100 guidelines. The 0-2 hour thyroid dose at the exclusion area boundary is 20 rem, less than 10% of the 10 CFR Part 100 guidelines values. The maximum 50-year organ dose from ingestion of water at the well nearest the site boundary is less than 10 mrem to the GE tract-lower large intestine, from non-absorbed ¹⁰⁶Ru. Stf. Ex. 1-C at D-2.

153. The Staff concluded that no offsite radiological impact detrimental to the public health and safety will result from the postulated seismic event, assuming loss of containment. Stf. Ex. 1-C at D-2.

154. The GETR facility, with proposed modifications, has been reanalyzed by GE, and reviewed by the NRC Staff and its consultants, to determine whether assurance is provided that the GETR can safely withstand the effects of the seismic design events. Detailed reviews have been carried out on safety-related structures, systems and components required to withstand the loadings representing the hazard defined by the seismic design criteria, including possible effects of shaking and faulting. Martore, ff. Tr. 2200 at 4.

155. The Licensee performed analyses to determine the ability of the concrete core structure to withstand the effects of a vibratory motion of 0.8g at the GETR site. Concrete cracking capacities have been determined using maximum allowable compressive stress values of 5400 psi, 3400 psi and 5000 psi for ordinary concrete, magnetic concrete and ferrophosphorus concrete, respectively, which are appropriate species of concrete in the reactor building walls. Lic. Ex. 25 at 1-2. Linear elastic, time-history dynamic analyses were performed using a lumped-mass cantilever model with foundation springs. Torsional effects were considered by including the eccentricity between the center-of-mass and shear center at each floor level of GETR. Shear forces and overturning moments were computed for all members, and response spectra were generated for each elevation. Parametric studies were performed to investigate the influence on the response of the structure to variation in soil shear modulus and average area of contact between the base slab and the underlying soil. The effects of torsion and foundation embedment on the structural response were also investigated. Additional parametric studies were performed to investigate the influence of the variation in model damping effects on the structural response.

156. The potential nonlinear effects were investigated by performing nonlinear analyses using appropriate analytical models. The objectives of the nonlinear analyses were to confirm the conservatism of the results of the linear elastic analyses.

157. Stress analyses were performed using a detailed finite element model consisting of three-dimensional elements. The analyses were based on a 0.8g effective peak horizontal ground acceleration and $\frac{2}{3}$ of this value for acceleration in the vertical direction. The ground response spectra was anchored to Regulatory Guide 1.60. The result of the analyses showed that the induced stresses in the portion of the concrete core structure which surrounds the pool and storage canal, and which also supports and protects the safety-related equipment and components necessary for safe shutdown, were much smaller than the cracking stresses. These stresses were determined from the forces obtained from the linear elastic dynamic analyses. The forces obtained from the nonlinear analyses were smaller than those obtained from the linear analyses. Furthermore, these analyses showed that,

although some cracking of slabs may occur exterior to the safety-related portion of the structure, the ductility demand for these slabs will be low, resulting in minor cracking. Lic. Ex. 25 at 2-1.

158. An analysis of the reactor building for effects of a hypothetical surface rupture offset was performed using a finite element model of that portion of the reactor building which supports and protects the safety-related equipment and components necessary for safe shutdown. A one (1) meter surface rupture was assumed as the basis for the analysis. The surface rupture plane was considered to be at an angle of 15 degrees with the horizontal; however, the angle of rupture does not affect the results of the analysis.

159. Three principal cases were analyzed:

Case 1. The surface rupture was considered to intersect the reactor building on the near side.

160. For this case, the near-side basement walls would be heavily loaded and would crack. The horizontal thrusts associated with the wall pressures would be resisted by shear forces due to friction under the basement mat. The soil pressures on the far side of the basement walls would not be significant and cracking of these walls would not occur.

Case 2. The surface rupture occurs on the far side of the reactor building.

161. In this instance, the horizontal soil pressures would be large and might cause the basement wall to deform on the far side. The horizontal force caused by the soil pressures on the exterior basement wall would be resisted by the shear forces mobilized by friction between supporting soil and the bottom of the foundation mat.

Case 3. The offset was assumed to occur near the center-of-gravity of the reactor building.

162. This case may create a cantilever effect since the far portion of the reactor building might be unsupported between the edge and the area where the soil makes contact with the foundation slab. The maximum stresses in the concrete core structure are produced for the cantilevered configuration. The length of the cantilever is dependent upon the soil bearing capacity beneath the reactor building. If the hypothetical surface rupture offset intersected the foundation mat between the far side of the reactor building and its center of gravity, the result may be an uplift of the building. To verify that the concrete surrounding the pool and canal could resist a cantilever situation, an analysis of the core and radial wall concrete was conducted to verify that the weight of the cantilevered portion of the building could be resisted. All computed stresses for the cantilever case are well below cracking threshold capacity values.

163. If the offset intersects the foundation mat closer to the near side, the reactor building would tilt and be supported in a simple beam configuration. It has been shown that if the foundation mat were to span as a simple beam, the foundation mat and reactor building floor slabs would yield until the concrete core structure settles down to the supporting soil. Soil pressures on both sides of the basement wall would be large and cracking would probably occur.

164. The Licensee performed a detailed analysis of concrete cracking patterns which are expected to occur in the event of the postulated surface rupture offset. It was found that the reinforcement in the base slab would yield first at a loading equal to, or less than, one-tenth of the weight of the reactor building. A soil bearing capacity of 20 ksf (kips [1,000 lbs.] per square foot) was assumed in the analysis. Even if the ultimate capacity of the soil were increased, a higher value of soil bearing capacity would not change the results since the base slab has already yielded. The concrete cracking patterns were shown to occur in such a manner as not to affect the interior portion of the structure surrounding the pool and canal. Excessive deformation of the basement walls would not adversely affect the concrete core structure since these exterior walls are not essential to the integrity of the structural system which supports the pool and storage canal. Lic. Ex. 25 at 3-1.

165. The Licensee performed an analysis of loadings on the reactor building which result from the combined effects of vibratory ground motion together with a surface rupture of one (1) meter occurring beneath the building. The analysis assumed that a vibratory ground motion of 0.8g occurred subsequent to the surface rupture. Furthermore, it was assumed that the damage caused by the offset had occurred prior to the ground shaking and that only the undamaged structure would resist the vibratory ground motion. The effective peak ground acceleration value of 0.8g was anchored to Regulatory Guide 1.60 spectra. It was found that the safety-related portion of the structure would be stable and that the forces and corresponding stresses induced by the post-offset motions would be below the threshold of concrete cracking. Lic. Ex. 25 at 4-1.

166. Additional studies were performed by the Licensee to determine the effects on the core structure when surface offset and vibratory motion were considered to occur co-seismically. If the offset intersects the foundation slab near the center-of-gravity of the reactor building, the building may exist in a cantilever configuration. A soil pressure analysis was performed to determine the physical limits on the combined load case comprised of a ground acceleration and a surface rupture offset, the latter being represented analytically as the cantilever length. Results were obtained for several cases of cantilever length and horizontal earthquake accelerations at which incipient, as well as complete, yielding of the soil occurs. Lic. Ex. 38.

167. The Staff questioned the soil bearing capacity analysis performed by the Licensee. It determined that the analysis had been based upon a lower soil bearing capacity (20 ksf) than was justified and that higher bearing capacities may result in

greater unsupported cantilever lengths than had been analyzed by the Licensee. Stf. Ex. 1-D at 2-3 and C-8.

168. The Licensee performed an additional analysis of the subgrade rupture mechanism resulting from the postulated Verona fault event. This analysis consisted of a comparison of the static stability of two-dimensional soil wedges formed by thrust fault planes meeting the reactor foundation at different locations (Rankine Fault Model). It was found that rupture planes would be deflected away from the base of the reactor slab because of the weight of the GETR and the surcharge. Lic. Ex. 20.

169. To support the fault deflection analysis, an event was described when such an effect is believed to have occurred, namely in 1976 beneath the Banco Central in Nicaragua. Lic. Ex. 1 at 93-94. This event was considered appropriate for analogy because of the similar massive compact structural characteristics of the Banco Central and the GETR.

170. The Staff reviewed the Licensee's fault deflection analysis and concurred with the finding that the previously hypothesized cantilever condition should not occur. The Staff concluded that use of results of the soil pressure analysis are acceptable for use in comparison with the inputs to the structural evaluations since they postulate a greater loading on the foundation mat than that predicted by the fault plane analysis. Stf. Ex. 1-C, Appendix B at 6.

171. Notwithstanding the possibility that the extreme weight of the GETR structure will cause fault deflection which would prevent the postulated cantilever, the Licensee's geotechnical expert testified that analyses had been performed using higher values (up to 30 ksf) of soil bearing capacities even though these values are believed to exceed those characteristic of the soils beneath GETR. Tr. 2295.

172. The Licensee and the Staff testified that the detailed analyses performed for the vibratory ground motions and surface rupture offset demonstrate that the concrete core structure which surrounds the pool and storage canal will maintain its integrity in the event that major earthquake motions and/or surface rupture occur at the GETR site. Lic. Ex. 22 at 127; Stf. Ex. 1-C at C-13. Thus, independent of the fault deflection analysis, this is additional assurance that GETR will withstand the full range of cantilever loading cases which might be postulated.

173. The integrity of the reactor vessel and the canal fuel storage tanks was evaluated by assuring the integrity of the supporting concrete core structure as discussed above, and by assuring that the capability of all essential components and equipment meets the seismic criteria. Evaluations of the reactor vessel lower head penetrations indicate that maximum stresses do not increase significantly during the design events and remain less than 10% of allowable. Therefore, failure due to seismic effects is not expected. In addition, it was assured that the failure of any non-safety-related components or equipment would not compromise the integrity of essential items. Stf. Ex. 1-C at C-9.

174. GE has evaluated the reactor vessel and internals, including the fuel and experiment capsules, for the loads resulting from the design seismic criteria. The fuel assemblies used in the core are flat-plate, uranium-aluminum alloy assemblies, consisting of 19 fuel plates each 0.050-inch thick (nominal), 2.80-inches wide and 37.25-inches long. The fuel plates are roll-swaged into 6061-T6 aluminum slide pieces, which act as protective skin containing the fuel. The allowable stress for this aluminum skin has been appropriately determined to be 200 PSI. This allowable stress does not take credit for the increased yield strength of the aluminum due to irradiation. The results of the seismic analyses indicate displacements at the core region to be minimal, and stresses on the aluminum fuel covering, about 70 PSI, to be significantly below allowable. Stf. Ex. 1-C at C-9.

175. Supports for the piping system and the other safety-related components have been analyzed in accordance with the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section III, Subsection NF. The piping systems have been evaluated against the loading combinations and acceptance criteria based upon the ASME Boiler and Pressure Vessel Code, Section III, Subsection NC for Class 2 piping. Stf. Ex. 1-C at C-4.

176. The allowable stress limits for structures, piping systems and components are determined on the basis of material properties at temperatures corresponding to the specific load combinations. Stf. Ex. 1-C at C-5. When appropriate, the procedures in the following concrete and structural codes have been utilized to evaluate the structures and components:

1. ACI 318-1971, "Building Code Requirements for Reinforced Concrete," American Concrete Institute, 1971.
2. AISC, "Specifications for Design Fabrication, and Erection of Structural Steel for Buildings," American Institute of Steel Construction, 1969. Stf. Ex. 1-C at C-5.

177. In addition, to assure the integrity of the reactor pressure vessel and canal fuel storage tanks, to keep all fuel covered with water, a source of makeup water to replenish that lost through boil off and evaporation is required. To achieve this goal, GE has proposed to install a Fuel Flooding System with redundant gravity flow (no power required) supply capability. Stf. Ex. 1-C at C-10.

178. The system consists of two redundant legs each capable of delivering the design flow rate. Each reservoir site consists of two 50,000-gallon polyurethane flexible "pillow" or "bladder" tanks situated on a hill adjacent to the containment building at an elevation which provides adequate gravity feed flow. Each supply leg is constructed from 1½" I.D., reinforced synthetic rubber. The line is "snaked" in a shallow trench providing line slack and permitting the line to accommodate postulated surface faulting. The Licensee performed a test to demonstrate that the postulated surface offset would not cause the line to fail. Lic. Ex. 22 at 117. Through the yard area, the line is buried in the event of postulated surface faulting due to either a seismic event or seismic initiated landslide. Each

supply leg approaches and penetrates the containment building from a different angle, and is routed to the irradiated fuel storage tanks in the canal and to the reactor pressure vessel. Each supply line inside the containment building is allowed to move within a protective cover. This arrangement protects the line and prevents unacceptably high seismic stresses. The lines inside the containment building are a combination of: (a) high pressure, high vacuum rated reinforced rubber, (b) stainless steel flexible hose, and (c) rigid stainless steel pipe. Reactor pressure vessel water addition (from the Fuel Flooding System) is to the reactor vessel standpipes (previously discussed), and therefore, to the bottom of the pressure vessel. Stf. Ex. 1-C at C-10, C-11.

179. An in-service surveillance and inspection program has been developed for the Fuel Flooding System from the source tanks to the points of connection at the reactor pressure vessel and the spent fuel storage system, including the interface with the containment structure. The design and analysis of the Fuel Flooding System, together with the implementation of the in-service surveillance and inspection program, provide reasonable assurance that required makeup coolant fluid to the reactor and the fuel storage system is available following the design basis seismic events. Stf. Ex. 1-C at C-11.

180. The Licensee testified that the structural and mechanical analyses described in the testimony demonstrated that the GETR safety-related structures and equipment as modified meet the following requirements:

1. The integrity of the reactor building concrete core structure which supports other systems and components important to safety is assured;
2. The integrity of the reactor pressure vessel is assured;
3. The integrity of the canal fuel storage tanks is assured; and
4. The capability of providing makeup water to the spent fuel storage tanks and reactor pressure vessel is assured. Lic. Ex. 22 at 131.

181. The Staff agreed with the Licensee and will impose technical specifications requiring completion of the modifications on the GETR before it resumes operation. Compliance with the technical specifications and periodic test and maintenance procedures will be verified by the NRC Office of Inspection and Enforcement. Tr. 2243.

V. CONCLUSIONS OF LAW

The Licensing Board has thoroughly reviewed and evaluated the evidence submitted by all parties with respect to the issues set forth in the Commission's February 13, 1978 Memorandum and Order. The Licensing Board has also considered all the proposed findings of fact and conclusions of law submitted by the parties. Those proposed findings not adopted by the Board are herewith rejected. Based upon its evaluation of the Staff's and Licensee's safety evaluations, the admitted written testimony of all of the witnesses, as well as the answers

elicited from these witnesses in response to questions of the Board and the parties, the Board makes the following conclusions of law:

1. The proper geologic and seismic design bases for the GETR should be as follows:
 - a) A surface offset design value of one meter of reverse-oblique net slip beneath the GETR should be utilized, along a fault plane of 2200 foot-wide Verona fault zone, which could vary in dip from about 10 to 45 degrees, occurring during a single event.
 - b) The Regulatory Guide 1.60 response spectra, anchored to 0.75g effective acceleration for an event on the Calaveras fault, and 0.6g effective acceleration on the Verona fault.
 - c) Combined loads caused by fault offset at the surface and vibratory ground motion from the Verona fault must be considered to act simultaneously, and the entire one meter of surface offset is considered to occur co-seismically.
 - d) A seismic event could trigger a landslide, causing a 1.0-meter slope displacement occurring near the toe of the slope, at some distance from the GETR; accordingly, the one-meter offset caused by the landslide must be considered in the design of safety-related equipment located in the area of the toe, such as the fuel flooding system piping, but need not be considered in the design of the GETR reactor structure.
2. The General Design Criteria of Appendix A to 10 CFR Part 50 apply only to power reactors and do not apply to the GETR.
3. Appendix A to 10 CFR Part 100 applies to power reactors and not to facilities such as the GETR, which does not produce electric or heat energy.
4. The design of GETR structures, systems and components important to safety does require modifications, and these modifications can be made so that the GETR structures, systems and components important to safety can remain functional in light of the seismic design bases determined in Issue One above.
5. The proffered testimony of James Glenn Barlow was properly excluded from the record in this proceeding.

VI. ORDER

WHEREFORE, IT IS ORDERED, in accordance with 10 CFR Sections 2.760(a) and 2.762, that this Initial Decision shall constitute the final action of the Commission thirty (30) days after the date of issuance hereof, unless exceptions are taken in accordance with Section 2.762 or the Commission directs that the record be certified to it for final decision. Any exceptions to this Initial Decision or

designated portions thereof must be filed within ten (10) days after service of the decision. A brief in support of the exceptions must be filed within thirty (30) days thereafter (forty (40) days in the case of the NRC Staff). Within thirty (30) days of the filing and service of the brief of the appellant (forty (40) days in the case of the NRC Staff), any other party may file a brief in support of, or in opposition to, the exceptions.

IT IS SO ORDERED.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**Dr. George A. Ferguson
ADMINISTRATIVE JUDGE**

**Dr. Harry Foreman
ADMINISTRATIVE JUDGE**

Dated at Bethesda, Maryland,
this 16th day of August 1982.

[Appendices A and B have been omitted from this publication but may be found in the Public Document Room, 1717 H Street, NW, Washington, D.C. 20555.]

VII. SEPARATE OPINION

Herbert Grossman, Chairman, Dissenting in Part and Concurring in Part

The Commission has requested the Board to determine the proper seismic and geologic design bases for the GETR facility and whether any modifications can be made so that the GETR structures, systems and components important to safety can remain functional in light of these bases. Commission Memorandum and Order, February 13, 1978. My fellow Board members have adopted the design bases recommended by NRC Staff and have determined that the modifications recommended by GE and Staff will maintain the functional integrity of the GETR's safety systems.

The principal geologic design basis adopted for the GETR consists of a surface offset design value of 1 meter of reverse-oblique net slip beneath the GETR resulting from an earthquake occurring on the Verona fault. The principal seismic

design bases consist of the Regulatory Guide 1.60 response spectra anchored to a 0.75g effective acceleration for an event on the Calaveras fault, and a 0.6g effective acceleration on the Verona fault. The combined loads caused by the fault offset and the vibratory ground motion from the Verona fault are to be considered as acting simultaneously on the GETR.

I dissent from my colleagues only on the surface displacement design parameter of 1 meter, which I consider not sufficiently conservative.²² I would adopt, instead, a 2-meter offset. This is slightly less than the Staff's original choice of a 2½ meter offset as a conservative design parameter, which led to its original conclusion that the GETR should not be restarted. Staff has changed its recommended geologic design parameters to a one-meter surface displacement, and has concluded on that basis that the GETR, modified as proposed by GE, can safely withstand the postulated design basis events.

Notwithstanding the Staff's original recommendation of non-resumption of operations because of the 2½-meter design parameter and Staff's current unwillingness to endorse a resumption of operations within a design parameter greater than 1 meter,²³ I would permit a resumption of operations under my recommended 2-meter design parameter. I would do so on the basis of GE's fault deflection analysis (which the Staff and I accept, albeit with some reservations on my part) that makes the size of the prospective surface displacement irrelevant with regard to the loading cases analyzed by GE. The fault deflection analysis concludes that an offset occurring beneath the GETR would be deflected to the perimeter of the reactor building. Except for certain flexible piping, used for the fuel flooding system and located out side of the reactor building, there does not appear to be any structure or equipment related to the seismic safety of the GETR that would be adversely affected by an offset that deflects around the reactor building. I expect that the flexible water piping could easily be modified to accommodate a displacement of 2 meters, rather than the 1-meter displacement for which it has been analyzed, and would require that modification as a condition for restarting the GETR.

²² Because of the Commission's charge to us to determine the geologic design bases, the portion of my opinion that disagrees with the Board majority's 1-meter design parameter must be considered a dissent, even though I agree (conditionally) that the GETR, as modified, can be restarted.

²³ If Staff has some reservations with regard to the ability of the GETR's safety systems to withstand a surface displacement greater than 1 meter, it has failed to sustain its burden of proving that such an offset would cause unacceptable damage. Under Section 556(d) of the Administrative Procedure Act (APA), 5 U.S.C. §556(d), which applies to this proceeding by virtue of APA Section 554(a), Section 181 of the Atomic Energy Act, as amended, 42 U.S.C. §2231, and 10 CFR §2.732, the proponent of a show cause order has the burden of proof. In *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-315, 3 NRC 101 (1976), the Appeal Board recognized that general rule of placing the burden of proof on the proponent of a show cause order, but applied an exception to the general rule by determining that the Atomic Energy Act and the Commission rules placed the burden on the applicant prior to the issuance of an operating license. Because we are considering a show cause order in this proceeding that involves an operating license granted on January 7, 1959 under which GETR had operated for almost 20 years, the exception recognized in *Midland* would not apply and the burden would remain with those attempting to establish that the GETR must remain shut down.

I. GEOLOGIC AND SEISMIC DESIGN BASIS

A. Geologic Design Basis

I would reject Staff's recommended design parameter of a 1-meter surface displacement from an event on the Verona fault, and would adopt a 2-meter displacement in its stead.

To place my major disagreement in sharper focus, it is important to recognize that, from the issuance of the show cause order in October of 1977, through September of 1979, Staff had adopted a surface displacement design parameter of 2½ meters, which led it to conclude that the GETR should not resume operations. It had rejected as a basis for its analysis GE's probabilistic study from which GE concluded that an offset underneath GETR could be disregarded as being improbable. Upon the urging of a member of the Advisory Committee on Reactor Safeguards, to which Staff had referred its recommendation, Staff reversed its position of not accepting probabilistic studies as a significant element in formulating its conclusions. Staff reevaluated its conclusions based on the GE probabilistic study and an independent probabilistic study by TERA Corp., which Staff had commissioned, and determined that a 1-meter offset was a conservative design parameter. On that basis, Staff reversed its prior recommendation prohibiting the resumption of operations, and concluded that GETR could be restarted if GE performed its recommended structural modifications.

For reasons explained below, I give little weight to the GE and TERA probabilistic studies, which were the most significant factors in the Staff's change of design parameter from 2½ meters to 1 meter, and conclude that a 1-meter offset is not sufficiently conservative.

1. *NRC Staff's Change in Position*

In September of 1979, the NRC Geosciences Branch issued a Safety Evaluation Report that supported its October 1977 decision to shut down the GETR. Stf. Ex. 1-A; Int. Ex. 8.²⁴ Based upon the underlying report, Staff concluded that a surface offset of 2½ meters could occur beneath the GETR and that no analytical argument could be formulated which could conclusively support the ability of a structure such as GETR to withstand such a surface offset. Stf. Ex. 1-A, cover letter.

²⁴ At the hearing, Staff offered as its Exhibit 1-A, an expurgated version of the September 1979 Geosciences Branch Safety Evaluation Report. See discussion at Tr. 986-88. Significant portions of the SER consisting of observations and conclusions that tended to support Staff's original recommendation of a 2½ meter surface displacement were deleted. The Board later received Int. Ex. 8, which was a complete copy of the original SER, sans the September 27, 1979, cover letter to GE under which the SER was issued. For convenience, I will cite only to Int. Ex. 8, the complete SER, unless I specifically refer to the cover letter that is included only in Stf. Ex. 1-A.

Staff's judgment was based, in part, on its understanding and evaluation of surface faulting that occurred during the 1971 San Fernando, California, earthquake. Staff believed that the comparison was reasonable because of general similarities between the San Fernando fault and the Verona fault. Staff also relied upon observations and calculations of its expert consultant, Dr. David B. Slemmons, that a 2½ meter net slip value is reasonable for a fault with a length between 8.2 and 12 kilometers, and on observations during site visits that there had been recurrent movements on the order of 1 meter on the three known shears in the Verona fault zone which could have occurred simultaneously during a single earthquake event. Since these shears were splays of the same fault at depth, even though the movements had occurred separately on the three shears, Staff considered that the total displacements for those shears might occur in a future event on any single splay or between them. *Ibid.*

Subsequently, although not required by statute or regulation, NRC Staff referred its recommendation to the Commission's Advisory Committee on Reactor Safeguards for review. At an ACRS subcommittee meeting held on November 14, 1979, GE presented its probabilistic analysis which Staff had previously rejected. Staff presented its comparison of the San Fernando data with the postulated 2½ meter offset from the Verona fault. Staff left that subcommittee meeting with the feeling that it was being a little too extreme in its use of the San Fernando data and that it should consider GE's probabilistic study in its further review of the geologic parameters. Tr. 1883-86. The Staff had received such a strong endorsement from the ACRS of the need for a probabilistic approach that it considered the meeting as "almost a mandate" that the Staff utilize a probabilistic analysis in establishing the design basis offset. Tr. 1887.

On May 23, 1980, Staff issued a Safety Evaluation Report (Stf. Ex. 1-B), which modified the conclusions regarding the proper geologic and seismic design bases expressed in its September 27, 1979 Report. The main change in design basis, which led to the Staff's recommendation that the GETR could be restarted, was the determination to include in the design basis a surface displacement of only one meter of reverse-oblique net slip on a postulated Verona fault zone strand beneath the GETR, as opposed to the prior determination to include a 2½ meter displacement.

Of some significance is the position of the U.S. Geological Survey. On December 9, 1977, NRC Staff had requested the USGS to assist in the review of the potential for surface faulting within the immediate vicinity of the GETR. Geological Survey personnel subsequently participated with Staff in the examination of the geology of the GETR site and the review of the geologic documents submitted to the NRC by GE. On September 5, 1979, the USGS submitted its review of the geologic data. After GE's presentation to the ACRS subcommittee on November 14, 1979, the USGS reviewed the material and submitted a further report to the NRC (under cover of letters dated April 22, 1980 and May 8, 1980). In both

reports, the USGS insisted that the surface displacement of one meter proposed by GE did not appear to be conservative. Int. Ex. 8, App. A at Conclusion 8; Stf. Ex. 1-B, App. B at May 8, 1980 cover letter. The Geological Survey continued to maintain that position throughout the hearing. Tr. 1243, 1378-81, 1384-85. The USGS explained its characterization of the postulated 1-meter offset's not being conservative as meaning that the Geological Survey considered the likelihood of one meter being exceeded as "reasonably high." Tr. 1410.

2. *The Probabilistic Analyses*

Despite the steadfast refusal of its principal geologic and seismic advisor, the USGS, to characterize the postulated 1-meter offset as a conservative design basis, the NRC Staff adopted the 1-meter offset as a design basis in its May 1980 SER. The main instigation for this change from 2½ meters to one meter was Staff's new-found reliance upon probabilistic analyses that it felt had been almost mandated by the ACRS. Based upon a conclusion that the probability was small that an offset from the postulated Verona event would surface beneath the reactor, Staff determined that it was unnecessary to consider the maximum offset that might occur from an event on the Verona. In its September 1979 Report, in which it had established a 2½ meter offset as a design basis, Staff had relied upon the maximum determined offset from the 1971 San Fernando event of 2.4 meters; the maximum displacements observed on a worldwide basis for magnitude 6 to 6.5 earthquakes; the possible maximum offset that had previously occurred on the Verona fault; and the assumption that the Verona fault could rupture to an extent greater than its entire mapped length of 8 kilometers, to its projected 12 to 15 kilometers of total length.

Based upon the probabilistic analyses, Staff now (in its May 1980 SER) decided that it could use the means, rather than maximums, of relevant geologic analogies to establish the design basis. In particular, Staff relied upon the means of the surface displacements from the 1971 San Fernando event; the characteristic offsets of from 2 to 3 feet observed in the trenches at the GETR site; the probability that in a future event the surface displacements would be distributed between different splays in the Verona fault zone rather than on a single splay beneath the reactor; and the probability that the Verona fault would not rupture over its entire length. Justus and Jackson, ff. Tr. 996 at 8-11; Tr. 1389-95, 1888-92. Staff, however, recognized that any future displacements on the Verona fault could have offsets of from 2 to 2.5 meters and that less than a 2½ meter offset would not be a conservative projection for the Verona fault zone but only for an offset occurring directly underneath the plant. Tr. 1394-95, 1402, 1404-05.

a. *GE's Probabilistic Analysis*

My review of the probabilistic analyses suggests that they should be given little weight. GE's probabilistic study was based upon geologic data derived from the trenching operations around the GETR. GE had discovered three separate shears, identified by the principal trenches in which they were unearthed: the H shear; the B-1/B-3 shear (also disclosed by trench T-1); and the B-2 shear. For its model, GE utilized the B-1/B-3 shear and the B-2 shear which were 1,320 feet apart, on two opposite sides of the 72-foot wide reactor building. By dating the soils from these trenches, GE determined a time period, *t*, by which it could reference its observations within that 1,320-foot wide zone with regard to the discovered shears and the area between them in which no shears were discovered.

GE presented a detailed probabilistic calculation. Lic. Ex. 1 at 79-83; Lic. Ex. 10, 12, 14, and 16. Recognizing that the complexity of the study would tend to obscure the important features, GE simplified it so as to permit an analysis by the Board. Lic. Ex. 1 at 76-79. The probabilistic model considered three cases: Case 1, based upon offset observations on shear B-1/B-3 resulting in annual probability P_1 ; Case 2, involving offset observations on shear B-2, resulting in annual probability P_2 ; and Case 3, involving offsets on unknown and undiscovered shears in the region, resulting in annual probability P_3 . GE added P_1 , P_2 , and P_3 to arrive at its overall probability estimate of *P*.

The simplified equation for probability P_1 was given, as follows (*Id.* at 77):

$$P_1 = \frac{N}{t} \times \frac{1}{N} \times \frac{72 \text{ ft}}{1320 \text{ ft}}$$

Event:	A	B	B
	offset occurs on existing shear B-1/B-3	offset occurs between existing shears given offset on existing shear B-1/B-3	offset occurs beneath reactor building given offset between existing shears

As GE describes the formula, for Event A the mean rate of occurrence of offsets on the existing shear is equal to the number of past offset events, *N*, divided by the amount of time, *t*, during which the events have been occurring. The time period, *t*, is equal to the age in years of the soil at the bottom of the trenches (which GE assumes to be 128,000 to 195,000 years). In this time period, *N* represents the number of events that have occurred on existing shear B-1/B-3 (similarly, another number of events have occurred on the B-2 shear). For the same time period, as

determined by the age of the soil at the bottom of the trench, GE assumes that the soil between the existing shears is unbroken; thus, that no events have occurred between the existing shears for the last 128,000 to 195,000 years. For small mean rates (i.e., a small number of offsets occurring over a long period of time), GE assumes that the probability of one event in a year is essentially equal to the mean rate. In other words, the probability is just equal to the number of offsets divided by the time period in which they occurred.

GE further states that, since during the same time period, t , none of the N events have occurred between the existing shears, it is possible to use zero divided by N as the probability for a future offset's occurring between the shears, given an offset on the existing B-1/B-3 shear. However, since GE concedes that this estimate would not be conservative for Event B, it assumes $1/N$ as a conservative probability of an offset's occurring between the shears instead of on shear B-1/B-3.

Finally, GE determines the probability of a new shear coming up beneath the reactor foundation instead of merely within the zone between the offsets, Event C, as being the width of the reactor building (72 feet) over the width of the zone between shears B-1/B-3 and B-2 (1,320 feet).

My major difficulty with GE's probabilistic model relates to the middle term $1/N$, representing the probability of an offset's occurring between existing shears. GE's use of this term as a multiplier, with N in the denominator, permits it to cancel N from the equation so as to eliminate it from the numerator of the first term (N/t). Consequently, GE can claim that the "probability is independent of the number of offsets, N ." *Id.* at 79.

However, the relationship assumed by GE of $1/N$ to N/t , a simple inverse relationship, is based upon an assumption that the offsets on the shears were not accompanied by offsets between the known shears (i.e., within the 1,320-foot zone between shears B-1/B-3 and B-2), although GE used $1/N$,²⁵ rather than $0/N$, for conservatism. While such an assumption may reasonably be made with regard to the topsoils where no surface shears can now be observed between the existing shears, the credibility of that inverse relationship between the number of offsets observed on the known shears and the probability of offsets occurring between the shears, expressed as $1/N$, becomes strained as the age of the soils (t) becomes greater. With regard to subsurface soils, comparatively little is known about the existence or non-existence of shears in between the known shears, except for the small areas that were actually trenched.

Furthermore, it is difficult to ignore the evidence that there may be existing shears, disclosed by photographs taken at the excavation of GETR, that surface directly beneath the reactor. USGS expert Dr. Brabb had examined the original excavation photographs and concluded that there was evidence of faulting. On

²⁵ There is no basis in the record for assuming that one (or only one) offset has occurred between the discovered shears.

receiving better quality photographs he downgraded the likelihood of the shears from being "probable" to "possible" because some of the features he had associated with faulting in the original photographs were shown to be material that was smeared on the side of the reactor excavation by the construction. However, he also indicated that not all of the features that he saw in these later photographs could be explained in that manner. Tr. 1036, 1059. Even if the possibility is slight but credible that the excavation photographs disclose existing faults, the basis for GE's probabilistic analysis (*i.e.*, that prior offsets have occurred on shears B-2 and B-1/B-3, but not in between) has been undermined.

The probability, P_2 , of a shear developing off of existing shear B-2 was calculated in an identical manner. Similarly, probability P_3 , was stated to represent a new shear forming due to unknown-undiscovered shears in the region. The same formula was utilized. Lic. Ex. 1 at 78-79. In each case (with regard to shear B-1/B-3, shear B-2, and undiscovered shears) the formula was reduced to $1/t \times 72/1320$, as the middle term $1/N$ cancelled out N from the numerator of the first term, N/t . In order to calculate the total probability, P , GE added probabilities P_1 , P_2 , and P_3 , to arrive at $P = 3/t \times 72/1320$. As GE indicates, this combined probability is independent of the number of offsets, N . *Id.* at 79.

Even if I were to accept the proposition that the probabilistic model is appropriate for shears developing from existing shears B-1/B-3 and B-2 (which I do not because I cannot accept the middle term $1/N$ as valid, as discussed above), I fail to see how P_3 can represent any more than a probability relating to only a single undiscovered shear existing between the two known shears. For any additional undiscovered shears, $P_4, P_5, P_6 \dots P_y$ would have to be calculated, where y = total of undiscovered shears in between shears B-1/B-3 and B-2. Consequently, the probability that a shear will intersect the foundation becomes $P = (2 + y)/t \times 72/1320$, rather than $P = 3/t \times 72/1320$. Since y has not been determined, we cannot calculate the probability.

In its September 1979 Report recommending the 2½ meter offset, Staff said the following about the use of probabilistic methods to predict ground displacement in the Verona fault zone (Int. Ex. 8 at 24):

Although probabilistic methods generally can be utilized for assessing the likelihood of occurrence of specific events, we conclude that such methods cannot be used with any level of confidence to specifically predict the location and likelihood of fault offsets within this active fault zone which is poorly understood.

At that time, GE's trenching operations to determine the geology of the Verona fault zone had already been completed. *Id.* at 13-18.

Even after receiving its "mandate" from the ACRS to utilize probabilistic methods, Staff made this comment in its May 1980 report in which it recommended the 1-meter offset (Stf. Ex. 1-B at 15):

Deciding the proper surface offset design basis for a facility within a fault zone by using the proposed probabilistic methods is not favored by any of the geological personnel involved in the review of this site. Several specific areas of concern were outlined above. Far more important, however, is the judgment that such methods are highly dependent on very uncertain input parameters and the critical effects of localized site specific conditions, that such methods have yet to be critically tested against sensitivity to a variety of parameters, and finally, that such methods suffer from a lack of testing against observations of fault behavior in well-known geological areas. The probabilistic calculations do, however, provide a frame of reference for making a judgment on geological offset parameters that are not at the upper bound for the dispersion of the available data. Furthermore, they help provide a perspective of the type of data which is needed and which is most critical to making a conservative estimate of the surface offset displacement.

How, in light of the judgment that the probabilistic methods were highly dependent on very uncertain input parameters, they were able to "provide a frame of reference for making a judgment on geological offset parameters," is not explained. The uncertain input parameters were stated by the USGS to include the "number, location, length, width, geometry, and age of [the] thrust faults" in the Verona fault zone which the USGS concluded had not been adequately determined. *Id.*, App. B at i. Furthermore, the USGS believed that GE's consultants had provided incorrect information on fault potential. *Ibid.*

Moreover, the USGS experts continued to express at the hearing the same reservations regarding the sufficiency of geologic information on which to base a probabilistic analysis as they had in their written reports: they questioned whether a sufficient number of ages had been developed in the dating of the soil deposits to give any degree of confidence in interpretation (Tr. 1468); they questioned whether enough investigation had been made of existing shears in the zone to permit a probabilistic determination (Tr. 1538-39); they indicated a reservation with regard to the amount of cumulative offset that was determined and also the amount that was determined on any one splay (Tr. 1552-53); they did not believe that the observations along the three observed shears were sufficient to allow them to assume any consistency with regard to the amount of offset that might have occurred at any particular event (Tr. 1555); and, to sum it up, they felt uneasy about critical information needed to predict the future behavior of the Verona fault in the sense of time, in the sense of the amount of displacement, and in the sense of where this displacement will occur. Tr. 1543. Furthermore, because the Verona fault zone had been observed to be not just a single fault plane, but one of complexity, it suggested a great deal of additional complexity that had not yet been observed, such as the existence of a number of small, intermittent, and short-length faults. Tr. 1536-37.

b. TERA's Probabilistic Analysis

In view of the uncertain assumptions in GE's probabilistic analysis, it is not surprising that Staff requested Lawrence Livermore Laboratories (LLL) to develop a probabilistic analysis using an alternative methodology. LLL in turn subcontracted this analysis to TERA Corp. Bernreuter, ff. Tr. 1801 at 2.

TERA Corporation's model did not rely upon the data derived from the trenching operations in the Verona fault zone. Instead, it calculated a slip rate, using the topographic expression between the Vallecitos hills and the valley below within which the test reactor sits. Based upon this slip rate, it then determined the likelihood of having one meter of slip occur in a tectonic event directly underneath the reactor building. Tr. 1803-06.

To calculate a slip rate using the topographic expression between the Vallecitos hills and the valley below, TERA must have made certain assumptions with regard to the time period over which the hills were formed, the nature of the fault movement at each offset, the distribution of movement between all possible shears in the area, the consistency of movement within the large time frame (1 million years) covered in the calculation and the effects of erosion upon topographic expression, to mention only a few possible assumptions. How TERA could make these assumptions with a high degree of confidence was not explained in the record.

Even assuming that one could arrive at a slip rate based upon topographic expression with any degree of confidence, translating the slip rate into a predictive tool for earthquake recurrence would appear to require considerable speculation. While the gradual buildup of strain and its sudden release in a tectonic offset is a generally accepted theory regarding the cause of earthquakes, use of this theory based upon topographic relief as a quantitative predictor of earthquakes in any particular region would be novel. I would have considerable difficulty in rationalizing the possibility of the occurrence of the 6.5-magnitude Imperial Valley earthquake of 1979, containing ground displacement of up to 0.8 meters, so soon after the occurrence of the 1940 7.0-magnitude event in which the maximum displacement on the same shear was 6 meters (see Tr. 562-3), if the strain release theory were used as a predictive, rather than merely an analytical, tool.

The unreliability of the use of a TERA-type analysis to predict the rate of occurrence of earthquakes is underscored by the testimony of certain of the expert witnesses. Staff's witness Wight from TERA discussed the model used to translate slip rate into a prediction of earthquake recurrence, in which the equation involves an estimate of fault area, slip rate, and rigidity of materials around the fault. Because there was no basis in the literature for using different values for the rigidity of the earth at different locations, TERA merely used commonly accepted values for the western United States. Tr. 1823-24.

Staff witness Slemmons testified that he would not make a decision on establishing the risk at major vital structures on the basis of the TERA probabilistic analysis, and couldn't even assess its reliability. Tr. 1822, 1824. The most he could offer for the analysis was that it had a sound basis and seemed to fit empirically reasonably well with field observations. Tr. 1824-25. He did not believe that future earthquake activity could reliably be predicted for a zone such as the Verona fault zone, which is tectonically related to activity on the Calaveras, Las Positas and Greenville faults, with the entire region undergoing strain that might vary with time and which might result in various sequences of activity from one fault to another. All of these interrelated fault zones suggested to him patterns of stress build-up that change with time. In addition, he saw very little data for reverse slip type faults, such as the Verona fault, on which to base a prediction. Tr. 1830-31. Dr. Slemmons also noted that a slip rate based on recent soils would usually be the most credible type of information but, because such a sampling would approach the length of an average recurrence interval, TERA had to base its study on a longer-term average rate (over approximately 1 million years), which might not be representative of the current seismicity. Tr. 1831-32.

GE's witnesses Drs. Jahns and Bolt had recently co-authored a report evaluating the seismic hazard in California. They had estimated the seismic hazards on the basis of three different kinds of evidence. Tr. 2009-10. They did not take into account evidence with regard to strain and rate of slip, because the actual implications and extent of fault creep are not very well known at the present time. Tr. 2024. Had the rate of slip been a reliable indicator of earthquake recurrence, Drs. Bolt and Jahns would have relied upon it in their paper. Tr. 2026-27. Even taking into account the possibility that strain might be released by gradual creep or by large displacements in a tectonic event and making an assumption about the percentage of each that would release the strain, Dr. Bolt would not give very much weight to any analysis based upon the uplift of hills. Tr. 2040-41. Moreover, any assumptions made about the percentage of strain that might be relieved in slow creep as opposed to tectonic displacement would not be reliable. There is no general figure that would apply: slow creep could account for 80 percent of the movement in one place and 20 percent in another. No generalization could be made with regard to the Verona fault. Tr. 2040, 2065-66.

I do not question the value of probabilistic determinations to give numerical perspective on the risks being considered. Nor would I attempt to substitute my scientific judgment for that of the eminent scientists on the ACRS who recommended relying on probabilistic analyses. However, from the evidence adduced at this hearing it does not appear to me that the views of the Staff geologists and their geologic advisers from the USGS with regard to the uncertainties in the assumptions underlying the probabilistic calculation were given sufficient weight in Staff's final conclusions. Although the Staff geologists appear willing to defer

their judgment to the probabilistics experts, notwithstanding the geologists' apparent reservations with regard to the adequacy of geologic data on which to base a probabilistic estimate (see discussion at Tr. 1330-36), the Board cannot so easily delegate its responsibility. While the numbers may work out to a low probability of offset beneath the reactor, the decision on whether the geologic data are sufficient for a probabilistic determination is a geologic decision, not a statistical one. The Board must rely upon the geologic evidence and an evaluation of the geologic opinions to make that decision.

In my opinion, based upon the evidence discussed above, neither the GE nor TERA probabilistic analysis (nor the combination of the two) is based upon data sufficient to establish that the maximum offset that might occur in the Verona fault zone has only an insignificant chance of occurring beneath the reactor. In determining the design basis parameter for an offset occurring beneath the reactor, I would take into account the maximum offset that might likely occur in the Verona fault zone based upon what has been observed in the trenches, upon the geologic history of the area, and upon appropriate comparisons with other faults.

3. *Observations at the GETR Site*

There were three primary splays of the Verona fault observed at the site, identified by the trenches in which they were observed: (1) the B-1/B-3 (and T-1) splay; (2) the B-2 splay; and (3) the H splay. According to GE's experts, cumulative displacements going back from 1 to 4 million years measured in trenches in B-1, B-2, and H amounted to over 40 feet, over 80 feet, and over 20 feet, respectively. Lic. Ex. 1 at 50-51. GE makes much of the fact that there were no direct measurements of recent displacements on a single splay which exceeded 3 feet. *Ibid.*, Lic. Req. Find. 48. By "recent displacements" GE apparently refers to the last displacement shown in each of those three trenches in which the maximum measurements were 2 feet, 3 feet, and 1.5 feet, respectively.²⁶ The USGS experts, however, dispute GE's determination that none of the latest offsets were greater than 3 feet. According to them, the shear that was exposed by trenches T-1, B-1, and B-3, disclosed an offset in trench T-1 of from 5 to 7 feet in the most recent soil in which the full displacement could be observed. Stf. Ex. 1-B, App. B at 22; Tr. 1133-36, 1155, 1157, 1164, 1176-77.

Viewing Staff's Exhibit 7, which is an annotated version of a portion of the T-1 trench log containing all of the line projections and points discussed with regard to trench T-1, and reviewing the voluminous testimony regarding that trench, it appears more likely to me that the amount of displacement that occurred in the

²⁶ Since the prior cumulative displacements in the Paleosol and the Livermore gravels totalled more than 3 feet in each of the trenches, it is impossible to determine whether the maximum displacement in any one prior event was as little as 3 feet. Lic. Ex. 1 at 50-51.

more recent soils would be measured from points 2 or 3 to point 9, a distance of from 5 to 7 feet (as interpreted by the USGS) than from points 2 or 3 to point 1, a distance of 2 or 3 feet (as interpreted by GE). See Tr. 324-59, 1133-78, 1436-1523. The USGS experts believed that the evidence in trench T-1 showed a displacement of about 5 feet on each of 2 breaks and they had a high degree of confidence in that conclusion, which was contrary to the conclusion of 2 feet of displacement testified to by GE's witnesses. Tr. 1155, 1157, 1176-77. When discussing a 5-foot displacement, the Geological Survey experts actually intended to encompass a 5- to 7-foot displacement. Tr. 1163-65.

Although GE raised many significant questions regarding the testimony of the USGS experts (see Lic. Prop. Finds. 51-57), the result is more to underscore the difficulty in arriving at a definitive interpretation of prior displacements on the observed shears, than to undermine the USGS's conclusions. With regard to whether certain of the conditions necessary to support the USGS's interpretation were absent from the soils, the USGS experts disputed the accuracy of the trench logs with regard to soil conditions and possibly some of the faulting, which were prepared by GE. Tr. 1111-12. In particular, the Geological Survey experts recalled an offset in the surface soils that would support their conclusion. They had reported the offset in their 1979 report to the NRC. They believed that GE's consultants had agreed to its existence but when they received the trench log of T-1 those soils were not shown as being offset. Tr. 1499-1500, 1510-11. Furthermore, according to the USGS experts, the soil units were not mapped on the log and therefore did not preclude the existence of a soil wedge that might be necessary to support their interpretation. Tr. 1511. The USGS witnesses also believed that GE's theory was flawed because it depended upon a surface's being rotated before the displacement of a fault — a theory that was implausible according to the geometry of the trench log. Tr. 1521-22.

Although GE downplays the significance of a belief that the recent soils were offset more than 5 feet in the T-1 trench, the USGS experts and Staff's consultant Slemmons disagree with GE. The belief that 5 or more feet of offset of the recent soils had been observed in trench T-1 apparently did have some influence on the USGS contention throughout the proceeding that a 1-meter offset would not be a conservative estimate for a future offset on the Verona fault. Stf. Ex. 1-B, App. B at May 8, 1980 Cover Letter; Tr. 1243, 1378-81, 1384-85, 1410. Dr. Slemmons indicated that if it could be verified that there had been a displacement of 5, 6 or 7 feet in trench T-1, he would change his opinion that a 1-meter offset would be a conservative projection. Tr. 1295, 1569.

In my opinion, we cannot determine with any confidence the maximum amount of offset that had occurred in any one event on the Verona fault. Although I would assign the highest credibility and competence to the USGS experts, Drs. Brabb and Herd, their analyses and observations could be mistaken. However, I would not give much weight to GE's argument that the number of direct measurements of

displacements (22) indicating displacements of less than 3 feet should establish the maximum to be expected. See Lic. Prop. Find. 57. These measurements were made in trenches B-1 and B-3 and, like the measurements made in trenches B-2 and H of displacements in the most recent soils, probably relate to only a single episode of faulting. Moreover, because the soils in those trenches could not be correlated with the soils in trench T-1 (which may have exhibited a younger soil), they may have reflected a different faulting episode than observed at T-1. Tr. 1462-68. While it is possible that a 5 to 7 foot displacement in trench T-1 could have reflected the cumulative offset of 2 faulting episodes, one on shear B-1/B-3 and the other on shear B-2 as suggested by Dr. Slemmons (Tr. 1295), it is also possible, as Dr. Slemmons further testified (Tr. 1569), that this total offset of from 5 to 7 feet could have occurred in one event on the splay in T-1 and branched off into lesser offsets on shears B-1/B-3 and B-2. More importantly, even if that latter suggested movement had not actually occurred so as to be responsible for the observations in the trenches, the Board should not ignore the possibility that the cumulative offsets shown in the observed shears from any one faulting episode might occur as a single displacement on a single shear in a *future* event.

As stated by Dr. Slemmons, "The possibility of simultaneous distributed displacements on two or more fault strands connecting at depth or a single cumulative displacement on one strand has not been evaluated" Int. Ex. 8, App. C at 2. In view of the similarity in strike and dip between the shears observed in trenches B-1/B-3, B-2, and H, suggesting some connection at depth, I do not see how we can dismiss, with a high degree of confidence, the likelihood of the total movement in any one event occurring as a single displacement on a single splay in the future, so as to eliminate that possibility from the design basis. Considering the likelihood that the total displacement for the three shears in what appeared to be the latest faulting episode was estimated to be between 6.5 feet and 9.5 feet (Int. Ex. 8, App. B at ii, 22), I would not set the design basis at less than approximately 2 meters (approximately 6½ feet) if I were basing the decision on what was observed in the GETR trenches. Even excluding the H shear and considering the B-1/B-3 (and T-1) shear and the B-2 shear, which were most similar, the cumulative offset in what may have been the last faulting episode was between 5 and 8²⁷ feet. *Ibid.*

4. Comparison with Other Faults, Including the San Fernando Fault

In establishing the 2½ meter displacement design basis in its September 1979 SER, Staff relied not only upon a conservative interpretation of the displacements that had been observed in the GETR trenches, but also upon comparisons with the 1971 San Fernando, California earthquake and other worldwide events. Int. Ex. 8

²⁷ Actually between 5 and 10 feet, if we take the maximum of the 5 to 7 foot offset suggested for the T-1 trench. Tr. 1163-65.

at 20-23. On the basis of worldwide data and given a rupture length of 12 to 15 kilometers as observed after the 1971 San Fernando earthquake, the studies relied upon by Staff would have predicted a maximum net slip value of from 1.66 to 1.83 meters. *Id.* at 22. Those figures were not much less than the maximum net slip of 2.4 meters observed at San Fernando. Consequently, the Staff adopted 2½ meters as a conservative value. Staff's consultant Dr. Slemmons agreed that a 2½ meter net slip value was reasonable for a fault with a length of between 8.2 and 12 kilometers (as had been estimated for the Verona fault) and the observed 1-meter offsets in the GETR trenches, and that it was consistent with worldwide data. *Id.* at 23; *Id.*, App. B at 3. GE, however, developed its own plot of surface displacement versus rupture length based on worldwide data and, using ½ of the total map length of 8.2 kilometers for the Verona fault, arrived at a maximum surface displacement of 1.02 meters. *Id.* at 20.

In revising the design basis to a 1-meter offset, Staff was motivated primarily by its acceptance of the probabilistic studies which suggested to the Staff that it need not consider only the maximum values of offsets in the trenches, in the San Fernando fault zone, and on a worldwide basis, but could consider the characteristic or mean values. Tr. 1890-92. As indicated above, I do not give much weight to the probabilistic studies, and could not justify a change in parameters on that basis. With regard to the San Fernando event, Staff also relies upon the stipulation that the assumption that the San Fernando and Verona fault zones are comparable is a conservative assumption and upon testimony to the effect that the use of a conservative analog such as San Fernando permits a scaling down from the maximum values to mean values. Stip. B at para. 2e; Tr. 1293-94; Stf. Prop. Finds. 53, 54.

Staff's reliance on the conservatism of the San Fernando model to scale down the maximum offsets observed in that event is misplaced. Although it may be a conservative model because the rupture length in the 1971 event was estimated at from 12 to 15 kilometers as opposed to the estimated maximum surface length for the Verona fault of 12 kilometers, stipulated to by the parties and approved by the Board (Stip. B at paras. 2f and g), there is no basis for presupposing that every characteristic of the 1971 San Fernando event will necessarily bound every similar future event on the Verona fault. Even if we could determine with certainty the maximum displacement, the mean displacement, and the peak ground motions at various distances in the 6.4 magnitude, 1971 San Fernando event, we cannot be assured that none of these values is likely to be exceeded in any future 6 to 6½ magnitude event on the Verona fault. To illustrate the point, we need only refer to the testimony (Tr. 562-64) regarding the Imperial Valley earthquakes of 1940 and 1979. In the 1940 7.0 magnitude event there was an average displacement of 1.7 meters and a maximum displacement of 6 meters; in the 1979 6.5 magnitude event there was an average displacement of 0.4 meters and maximum displacement of 0.8 meters. Had the events been reversed and the characteristics of the 1979 event

been used to predict the 1940 event, it would have "seriously underestimated" the 1940 values, even on that identical fault. Tr. 563. Here we have a comparison of two *different* faults (Verona with San Fernando) with only similar characteristics of faulting (*i.e.*, reverse-oblique, with some strike-slip component) and similar lengths, in common.

Moreover, we are not at all certain how much more conservative we should consider the San Fernando analog to be to a future event on the Verona fault. It has been stipulated that an earthquake occurring on the Verona fault could have a magnitude of from 6 to 6.5. Stip. B at para. 2k. Staff's consultant Dr. Slemmons had previously indicated a potential magnitude of about 6.5 ± 0.5 for an earthquake generated by faulting that is limited to the Verona fault zone. Int. Ex. 8, App. B at 3; Stf. Ex. 1-B, App. E at 12-13. The San Fernando event had a 6.4 magnitude.

Although the Verona fault has been mapped at from 8.2 to 12 kilometers and stipulated to be a maximum of 12 kilometers, this compares very closely with the stipulated observed surface rupture during the San Fernando event of about 12-15 kilometers (Stip. B at para. 2g). We have no reason to believe that a future high-magnitude event on the Verona fault would rupture any less than its observed trace, as suggested in GE's original calculation of a 1.02-meter offset based on only 4.2 kilometers rupturing of the assumed 8.2 kilometers of the total length of the Verona fault. Int. Ex. 8 at 20. No evidence has been offered that would support the conclusion that the 1971 earthquake ruptured only a portion of the known trace of the San Fernando fault. For all this record indicates, the 1971 San Fernando earthquake may have ruptured along a length of fault much greater than had been previously traced or had even been previously faulted.

Furthermore, even if we assume a slightly lesser length for the Verona than for the San Fernando fault, the difference should not be significant in evaluating surface displacement. The relationship of maximum surface displacement to length of surface rupture, as observed from worldwide data, appears to be logarithmic so that, unless the estimated length of surface rupture were to change dramatically, the difference in estimated maximum surface displacement would only be slight. Lic. Ex. 1 at 47-49. Also, as noted by GE, the plot of worldwide data for different types of earthquakes indicates that the best straight-line fit for reverse-oblique-slip faults, the characterization given to the Verona fault, has a negative slope that indicates decreasing surface displacement with increasing fault length. *Ibid.* (See also the testimony indicating that the relationship between rupture length and magnitude is considered logarithmic so that estimated magnitudes would be relatively insensitive to variations in postulated lengths of rupture. Tr. 1574-85.)

With regard to the comparisons of length of surface rupture between the Verona and San Fernando faults, we cannot be certain which lengths are most relevant for comparison. The San Fernando fault zone has been described as part of the Sierra

Madre-Santa Suzanna system, which is perhaps 100 kilometers or more in length. However, that system is rather segmented and the San Fernando fault portion that broke in 1971 had a length of about 12 to 15 kilometers. Tr. 1872. Even the San Fernando portion that ruptured in 1971 had 4 discrete segments, each with its own characteristics: the Sylmar, Tujunga, Mission Wells and Lakeview segments. Two of those segments exhibited principally strike-slip movements and the other two thrust fault movements. Tr. 1283-84.

Similarly, the Verona fault has been described as either truncated by or merging with the Calaveras fault to the northwest and joining with or being truncated by the Las Positas fault on the east, which in turn is connected to the Greenville fault. Tr. 1096, 1193-96, 1830; Int. Ex. 8 at 11, 21; Stf. Ex. 1-B, App. B at 66. The mapped length of the Calaveras is approximately 100 miles (Tr. 681), considerably longer than the 100 kilometers estimated length of the Sierra Madre-Santa Suzanna-San Fernando fault system. I see little in the record to demonstrate that the Verona fault is not as directly connected to either the Calaveras or Greenville fault systems as is the San Fernando to the Sierra Madre-Santa Suzanna fault system.

Although the estimated length of the Verona fault of 12 kilometers is less than the 12 to 15 kilometers of rupture length of the San Fernando fault, it is considerably greater than any of the four segments that ruptured during the 1971 earthquake. Moreover, by adding the length of the Verona fault to that of the Las Positas fault, which the Staff witnesses thought were connected and would have a combined length of from 23 to 29 kilometers (Tr. 1096, 1196, 1249-56, 1676), we would arrive at approximately twice the length of the 1971 San Fernando rupture. Since the same compressive forces have been theorized as creating the faulting movements on the Verona as on the Las Positas fault (Stf. Ex. 1-B, App. B at 64-67), it would not be unusual for future movement to be simultaneous on both faults, albeit predominantly thrust faulting on the Verona and strike slip faulting on the Las Positas. This would be similar to the simultaneous rupturing of the four discrete segments of the San Fernando fault in 1971, with a somewhat different character of movement on each segment. Consequently, while the comparison of the 12 kilometers of Verona fault to the 12 to 15 kilometers of the San Fernando fault may appear to support the conservatism of the analogy to the San Fernando 1971 event, I am not assured that the comparison of those two lengths is the most significant that can be made, and that the comparison is conservative.

There is some uncertainty with regard to the application of the San Fernando data to the Verona fault zone. Although the experts appear to agree that the maximum net slip observed in the 1971 San Fernando earthquake was 2.4 meters, when it comes to projecting an estimated offset to the Verona fault they are not unlike the six blind men and the elephant, with each examining a different characteristic of the event and projecting it to a variety of postulated events on the Verona fault. Although the Staff originally adopted the 2½ meter maximum net slip observed at the San Fernando, when it changed the design parameter to one

meter it relied upon data compiled by Barrows and others in a 1973 paper based on 179 observations of vertical surface offsets that occurred during the San Fernando earthquake. The Barrows analysis determined the means of observed vertical throw on a given fault break to be about 0.34 meter. Staff then applied its projected 1-meter net slip offset to a postulated fault dipping at 45 degrees, and calculated a 0.7 meter vertical throw. The 0.7 meter throw not only exceeded the calculated 0.34 meter mean, but apparently exceeded the mean plus 1 standard deviation for the observed data for all segments of the fault. Stf. Ex. 1-B, Section A at 19.

Dr. Brabb of the USGS disagreed with the Staff's treatment of the San Fernando data from Barrows and preferred data based upon net slip determinations, rather than projections from calculations of vertical throw. He relied upon net slip determinations made by Sharp of the USGS which yielded a mean value slightly in excess of 1.0 meters, one meter being exceeded 52% of the time. Lic. Ex. 1 at B-2.

GE made its own calculation for San Fernando and arrived at a mean net slip of 0.22 meter, a standard deviation of 0.50 meter, with a total mean plus one standard deviation of 0.72 meter. *Id.* at B-3 to B-10. GE's approach was to assume a grid of squares, each 72 feet by 72 feet (*i.e.*, the area of the GETR foundation) placed over the entire San Fernando fault zone. For each square, an offset was calculated in a fashion similar to Sharp's analysis by analytically combining measurements of vertical and horizontal offsets based upon data compiled by Sharp, Barrows and others. GE determined that, for the total of 7,383 72' by 72' squares in the San Fernando fault zone, 1,888 contained offsets and 5,495 did not. It then determined that the mean offset for all squares, including those without offset, was 0.22 meter. *Ibid.*

At once, GE's analysis says too much and too little about the San Fernando event for a comparison with the Verona fault. It presumes not only that the magnitude of the surface displacements observed in the San Fernando fault zone will be comparable to that which could be expected in a future event on the Verona, but that the configurations of the fault zones are similar. No such foundation has been established and, from the testimony presented with regard to the four discrete segments of the San Fernando zone (Tr. 561-62, 1283-84), such similarity in the respective fault zones appears unlikely. GE's analysis is basically a probabilistic determination of the net slip that could be expected if a future event were to occur in the *San Fernando fault zone* similar to what occurred in 1971 and a structure such as GETR were placed at random in *that zone*, giving full weight to the possibility that the structure might be located on a square that would not experience an offset. Lic. Ex. 1 at B-3. That comparison goes too far. The comparison should only proceed to the point of projecting an expected net slip on the Verona shears from the San Fernando data and then, perhaps, evaluating the possibility of those shears intersecting the GETR facility based upon the configuration of the *Verona fault zone* (if sufficient geologic input is available).

GE's analysis says too little about the displacement that actually occurred on the San Fernando shears that might be projected to the Verona fault, when it concludes that a mean of 0.22 meter can be assumed for the squares with and without offsets. If, however, we eliminate the squares without offsets (5,495 in number) and distribute the displacements to the squares with offsets (1,888 in number), we arrive at a mean offset of 0.88 meter of surface displacement. This figure roughly coincides with, and appears to confirm the reasonableness of, the Sharp calculation of an average offset approximately equal to one meter, referred to above.²⁸

Viewing the evidence and statistical interpretations regarding the San Fernando event as a whole, it would seem reasonable to conclude that three quarters of a meter to one meter could be considered a "characteristic," "typical," or "mean" displacement along the shears of the San Fernando fault. It is also clear that net slip along the four discrete segments of the fault varied, as did even the displacements within the segments. In fact, Staff expert Dr. Justus agreed (Tr. 1283) that calculated net slip of from 2.0 to 2.5 meters was representative of at least 1.4 kilometers of the 2.9-kilometer length of the Sylmar segment. This 1.4-kilometer section represents approximately 10% of the total San Fernando rupture length.

The San Fernando data and interpretations appear to confirm the observations at the GETR site. The characteristic displacements of perhaps three-quarters of a meter to one meter in the San Fernando zone are almost exactly duplicated by the apparent consensus among the experts that, in the latest faulting episode on each of the three known Verona shears that were observed in the B-1 trench, B-2 trench and H trench, the observations of net slip were 2 feet, 3 feet, and 1½ feet, respectively. The interpretations of the latest movement on the shear observed in the T-1 trench ranged from 2 feet to 7 feet, duplicating the range between the "characteristic" movement and the maximum movement on the San Fernando fault.

Even if we could analogize the configuration in the San Fernando fault zone to the Verona fault zone, I see little merit in reducing the movement on the Fernando *shears* to a movement within a typical 72'-square *zone* and applying that *zonal* movement to the GETR site. If we could accept as valid the hypothesis that in a future event in the Verona fault zone only 1 out of 4 squares in the area of the GETR foundation will experience displacement, those that do will experience the *full* displacement, not merely one-quarter of it. Whether we should also take into account the *probability* that a square will experience displacement is an entirely

²⁸ It does, however, appear to conflict with the Staff's calculation that 1 meter of net slip would result in approximately 0.7 meter of vertical offset and that 0.7 meter offset would exceed the mean plus one standard deviation for the observed data for all segments of the San Fernando fault. In view of the method utilized by Staff of considering only observations of vertical throw on the San Fernando fault and calculating net slip on the basis of a postulated offset dipping at 45 degrees, one could have little confidence in the result. It is perhaps for this reason that Staff offered that its statistical interpretation must be viewed cautiously because of possible bias in the sampling and measurement of offsets in the field. Stf. Ex. 1-B at 19.

separate consideration, but taking into account a probability of 25% for the occurrence of an event is insufficient, in my opinion, to remove it from the design basis.

In sum, I can accept the proposition that one meter or slightly less than one meter can be considered a characteristic displacement for the Verona fault zone, as it was for the 1971 San Fernando event. However, even if one meter were a characteristic movement for the next event on the Verona fault, there is a strong possibility that it will be exceeded on some portions of the shear. Hence, I could not consider one meter to be conservative and, therefore, appropriate for the design basis. If anything, the San Fernando data demonstrate that a measurement at one location on the rupture is unlikely to reflect exactly the movement at any other location. Consequently, a movement of 5-7 feet on the T-1 location of the Verona fault is not necessarily inconsistent with movements of 2 or 3 feet in other locations for the same event. Based on the San Fernando observations, it would only be a matter of chance if the trenches at GETR managed to unearth the locations that experienced the greatest movements in the most recent events.

Similarly, on the basis of what had been observed on the Imperial Valley fault in the 1940 and 1979 events, where the average and maximum displacements between the two events differed by factors of from 4 to 7, respectively, we must take into account the possibility that the mean displacement on the next Verona event could greatly exceed what had been experienced in the recent past or in the San Fernando event. I can find no exact number to represent a conservative design parameter. For the reasons just discussed, one meter appears not to be conservative. The original Staff design parameter of 2½ meters, representing the single observed maximum in the San Fernando event and the maximum interpretation of the T-1 trench observations at GETR is, perhaps, too cautious. In the absence of any compelling reason to the contrary, I would select a 2-meter offset as an appropriately conservative figure, given that one meter is inadequate.

5. Lack of Conservatism in the 1-Meter Offset

The Staff has justified the 1-meter surface displacement design parameter as including a set of conservative assumptions. Stf. Prop. Finds. 40-42. It explored these alleged conservatisms in detail (Prop. Finds. 43-93), and concluded (Prop. Find. 94) that the use of the design value of 1 meter beneath the GETR is reasonably conservative when placed in the context of the total information presented in this proceeding. I do not agree.

a. *Landslide vs. Tectonic Origin of the Verona*

Although the parties have stipulated (Stip. Para. 2.b.) that the Verona fault is tectonic in origin, the Staff notes that GE's experts and the California Division of Mines and Geology had concluded that a landslide is the preferred interpretation of the cause of the Verona shears. Stf. Prop. Find. 43. In light of the Board approved stipulation, which removed the issue from consideration, it would be improper for the Board to give any weight to that interpretation. Moreover, the evidence appears overwhelming that the shears had a tectonic origin. See Stf. Ex. 1-B at App. B; Tr. 1606-09. The testimony and evidence presented to the contrary reflect more upon the reliability of the experts presenting that evidence than upon the merits of that issue (or non-issue, as the stipulation requires). See Tr. 247-53, 474-78, 1602-09.

Even accepting the possibility of a landsliding origin for the observed shears does not justify attributing any conservatism to the quantitative design parameters established for vibratory motion or surface displacement. If the possibility is substantial that there was a tectonic origin to the shears, we must consider the full extent of a possible future tectonic event; we cannot adopt design parameters that represent a hypothetical compromise between a tectonic event and a landslide.

b. *Probability of Occurrence of 6.5-Magnitude Event on Verona Fault*

The Staff also uses as a conservatism for its 1-meter design parameter the testimony given at Tr. 1657-63 that it is unlikely that a 6- to 6.5-magnitude event would occur on the Verona fault for thousands of years. Stf. Prop. Find. 44. Staff's summary of the opinions offered, that it is unlikely that such an event would occur for "up to 10,000 years" (*ibid.*), covers a wide range. It covers only two numerical figures given of "in about another 5,000 years" (Tr. 1660) and of "perhaps 5,000 or 10,000 years down the road" (Tr. 1663), which were based upon a slip rate of one meter per 10,000 years for that magnitude event and an assumption (disputed by GE) that the last event of that magnitude had occurred only 1,500 to 4,000 years before.²⁹ The testimony summarized by Staff also included an opinion that the likelihood of such an event is "high enough that it should be considered" in the design basis. Tr. 1658. Moreover, the top-of-the-head opinions were not intended as affirmative evidence, but appeared to be based upon accepting as hypotheses certain geologic approximations made by other Staff witnesses that must be independently assessed by the Board on the basis of the evidence.

²⁹ If we accept GE's assumption that the last such event occurred 10,000 years ago (see Stf. Ex. 1-B, App. B at 16), a similar event would be imminent according to the testimony alluded to by Staff.

c. *Consideration of Fault Rupture Greater Than the Mapped Length of Verona*

The Staff claims that it assumed a rupture of 12 to 15 kilometers for the Verona, despite its entire mapped length of no more than 12 kilometers, which Staff indicates would "correlate with" a displacement of about one meter. Stf. Prop. Finds. 45, 46. By "correlate with" Staff apparently means result in a likely, rather than maximum, displacement. See Tr. 1187-88. Its reference to Lic. Ex. 21 at 16, 17 for the proposition that a rupture length of up to 15 kilometers results in a "maximum surface offset of less than 1 meter," is inaccurate. That exhibit (the prefiled testimony of Licensee's witness Kovach) was based on calculating an "amount of expected *average* net offset." *Id.* at 17. GE had earlier estimated a maximum surface displacement of 1.02 meters using a total length of only 4.2 kilometers based upon data by Staff witness Slemmons in a 1977 study. Int. Ex. 8 at 20. In a later study done for the NRC in this proceeding, Dr. Slemmons used rupture lengths for the Verona of from 8.2 kilometers to 15 kilometers and arrived at "likely" surface offsets of from 2 to 3 feet, and "maximum" offsets of from 2 to 2.5 meters. Stf. Ex. 1-B, App. E at 12-14; Tr. 1187-88. As discussed in detail above, we have no way of knowing whether a future surface rupture would confine itself to only a portion of the known trace of the Verona, would cover the entire trace of the Verona, or would even extend beyond the presently known trace. Furthermore, we must recognize the possibility, however slight, that the Verona and Las Positas combined, of from 23 to 29 kilometers, might be the controlling length of fault for influencing the magnitude and, hence, the amount of surface displacement in a future event. Taking all of these factors into account, the Staff's 1-meter design parameter cannot be considered conservative. These factors reinforce my position that, while one meter could well be the *characteristic* displacement in a future event of the highest magnitude expected on the Verona fault, a greater displacement could likely occur that should be taken into account in the design parameters.

d. *Consideration That Offset Will Occur Beneath the Reactor*

Staff contends that its design basis is conservative because it assumes an offset will occur directly beneath the reactor even though future offsets are more likely to occur on existing faults and GE's experts had concluded, upon analysis of photographs of the excavation of the GETR foundation, that there were no faults under the GETR. Stf. Prop. Find. 55.

Staff errs in analyzing its own position as including an assumption that there is a capable fault beneath the reactor building. Staff, in fact, accepted GE's probabilistic conclusions which were based upon an assumption that there were *no* capable faults underneath the reactor. As discussed above, GE recognized that a future

offset would most likely occur on an existing shear, rather than between shears. It treated the area underneath the GETR foundation as having a low probability (equal to any other area between the B-1/B-3 and B-2 shears) of experiencing an offset. Had GE assumed a capable fault beneath the GETR, it would have had to assume a higher probability for a future offset's occurring beneath GETR. The Staff cannot, on the other hand, accept GE's probabilistic conclusions, which are based on the assumption that there is no capable fault underneath GETR and, on the other hand, profess to have assumed in its design basis the existence there of a capable fault.

Similarly, the Staff is inaccurate in claiming that it was conservative in assuming that "an offset will occur directly beneath the reactor." Stf. Prop. Find. 56. As the section on structural analysis demonstrates, and as Staff's Proposed Finding 183 concedes, Staff did not find GE's bearing capacity analyses, which were based upon an offset occurring directly beneath the reactor, to be acceptable. In their stead, Staff accepted GE's fault deflection analysis that was based upon an assumption that the offset will not occur directly beneath the reactor because it would be deflected to the perimeter of the reactor foundation.

Finally, as discussed above, the testimony indicated a possibility that the excavation photographs disclosed pre-existing faults underneath the reactor. Since Staff, in fact, did not give any weight to that consideration in arriving at the 1-meter design parameter by accepting GE's probabilistic analysis and deflection analysis, both of which assumed that no capable fault existed beneath the GETR, Staff's design parameters are non-conservative in that respect.

e. Consideration of Co-Seismic Slip and Combined Loads

Staff contends that its consideration of an offset's occurring simultaneously with the ground motion in calculating the combined loads on the reactor is a conservative assumption in that "most of the time" they are separated in time. Staff attributes this conclusion to its Staff expert, Dr. Jackson, and to the USGS. Stf. Prop. Find. 57. Staff points out that co-seismicity is a "worst case assumption." *Ibid.*

Staff portrays the testimony somewhat inaccurately. The Staff's and USGS's experts modified their original testimony, given at Tr. 1048-50, which Staff accurately summarizes, to indicate that the ground motion and surface displacement were simultaneous at San Fernando; that co-seismicity is the rule for strike-slip and normal dip faults; and that there is very little data on which to form a general opinion with regard to reverse dip faults (as is hypothesized for the Verona fault). Tr. 1051-53. What they did reach a definitive conclusion on was that co-seismicity is an appropriate assumption. Tr. 1053.

Moreover, Staff's assertions (Stf. Prop. Find. 58) are misleading that it required as part of the design basis that the total surface offset and vibratory ground motion

be considered to occur concurrently at the GETR. That assumption was not included in the design requirements of GETR for its structural analysis. As my discussion with regard to the structural analysis will indicate, GE made no calculation using more than a 0.3g vibratory ground motion (and certainly not the postulated 0.6g maximum vibratory ground motion from the Verona fault) in conjunction with *any* surface displacement. Nor did it consider the maximum loading that could be imposed on the reactor building from a surface displacement of one meter in conjunction with *any* ground vibratory motion, as will be discussed below. Furthermore, since the Staff did not accept GE's structural analyses on the combined loading, but rather accepted only the deflection analysis which concludes that a combined loading on the foundation of the reactor will not occur, it cannot properly claim to have made any assumption of co-seismicity, much less a worst case assumption in which the *total* surface offset and vibratory ground motion are considered concurrently.

f. Other Lack of Conservatism in Staff's Proposed Design Basis

In addition to the conservatisms discussed above that were allegedly relied on but not actually taken into account in the Staff's proposed design basis (*e.g.*, Verona fault combined with Las Positas, Greenville and/or Calaveras; possible existence of capable fault under GETR; concurrent total ground displacement and maximum vibratory ground motion), there are a number of other observations testified to by the experts that suggest a lack of conservatism in Staff's proposed design basis, even though they may not have been quantifiable.

- i. In the structural analysis, Staff and GE did not take into account vertical accelerations greater than $\frac{2}{3}$ of the horizontal accelerations, even though the peak vertical accelerations at the Imperial Valley 1979 earthquake, the Gazli earthquake of 1976, and the Coyote Lake earthquake of 1979 exceeded peak horizontal accelerations. Tr. 528, 618-19.
- ii. Staff and GE did not take into account a hypothetical earthquake on the Calaveras fault a few kilometers north of GETR near Dublin, such as occurred in 1861, with a rupture propagating to the south, which could create greater than anticipated ground motions at GETR because of seismic focusing and which could rupture the surface at GETR. Tr. 590-91, 641-46, 689, 700-01.
- iii. Staff and GE did not take into account the fact that, because GETR lies within a zone of faulting of such complexity, there are typically other breaks that would comprise that zone so that there would be a greater likelihood of faults in the zone other than those already discovered, including faults beneath the reactor itself. Tr. 1346-47, 1536-37.

- iv. Most importantly, in accepting a design parameter of one meter of surface displacement, Staff and GE did not take into account the possible observed offset of 5-7 feet in trench T-1, the possibility that a future offset under GETR could experience a total displacement equal to what had been observed as separate displacements on the known shears in the most recent event, and the 2- to 2½-meter offsets at San Fernando which were typical of the displacements on a significant segment of the fault as more fully discussed above.

B. Seismic Design Parameters

For its seismic design basis parameters, Staff has recommended that the Regulatory Guide 1.60 response spectra be anchored to 0.75g effective acceleration for events on the Calaveras fault, and to 0.6g effective acceleration for events on the Verona fault. For the Verona fault, the ground motion would be combined with whatever surface displacement is appropriate from an event on that fault. Staff does not distinguish between horizontal ground motion and vertical ground motion in its stated proposed design basis parameters. However, in conformance with current engineering practice, it requires that the structure be able to withstand vertical ground accelerations equal to two-thirds of the horizontal accelerations.

I concur with my fellow Board members in accepting the ground motion design parameters recommended by Staff. I do not, however, subscribe to their entire analysis in arriving at this joint conclusion. In certain respects, I believe their findings overstate the case made by Staff and GE.

1. Horizontal Ground Acceleration

I accept, as the starting point for determining effective acceleration, the stipulated peak horizontal acceleration at the GETR site resulting from an earthquake of magnitude 6 to 6.5 centered on the Verona fault, of 1g. Stip. 2.r. Consistent with that value resulting from an event on the Verona fault would be a peak horizontal acceleration at the GETR site slightly in excess of 1g, resulting from an earthquake centered on the point of the Calaveras fault nearest the site. Devine, ff. Tr. 996 at 3. The testimony of GE's witness Dr. Kovach, alluded to in Staff Proposed Finding 104, suggesting lower values of peak instrumental accelerations, does not withstand careful scrutiny. Dr. Kovach reached expected values of peak instrumental accelerations of from 0.58g to 0.74g for an event on the Calaveras fault and up to about 0.4g for an event on the Verona fault. Lic. Ex. 21 at 21-22; Tr. 593-96. However, he used the means of the horizontal peaks and their 90° components, rather than the peaks themselves (Tr. 616-17); he admitted that the USGS calculated values 20% higher than he, including a determination that peak

accelerations for a 7.5-magnitude event at 3 kilometers (analogous to ground motion at the GETR site from an event on the Calaveras fault) of 1g would be exceeded 50% of the time (Tr. 633-35); he admitted that seismic focusing might increase the values by up to 20% (Tr. 536, 700-01); and, he did not exclude the possibility that peak accelerations on the order of 1g could occur at the GETR site (Tr. 539). Dr. Kovach's testimony, taken as a whole, lends support to the stipulated value for peak horizontal accelerations of approximately 1g.

The design basis parameters, however, are not tied to peak instrumental accelerations, but to "effective" acceleration values of 0.75g and 0.6g for events on the Calaveras and Verona faults, respectively. The Regulatory Guide 1.60 response spectra are anchored to those values. It is Staff's testimony regarding "effective" acceleration that is critical to the design parameter since no other party offered evidence on effective acceleration.

Staff's testimony equated effective acceleration with values for peak instrumental accelerations recorded at locations at significant distances from the earthquake source. Hall, ff. Tr. 1680 at 5. The main justification for using less than the peak near-field instrumental acceleration to anchor the response spectra is that the peaks recorded in the near field are at too high frequencies and are insufficiently repetitive to cause structural damage. Tr. 1736-40. Staff offered extensive, uncontradicted, testimony to the effect that peak instrumental acceleration in the near field must be reduced in order to correlate the response spectra anchor points to observations of damage to structures. Tr. 1687-88, 1728, 1730-32, 1754; Hall, ff. Tr. 1680 at 2-4.

While I do not doubt that the peak instrumental acceleration figures must be reduced to correlate them to observed damage, I am not fully satisfied with how the Staff experts arrived at their 0.75g value of effective acceleration from an event on the Calaveras fault. Apparently, the ACRS subcommittee (at a meeting in June, 1980) had also not been satisfied with the substantiation for Staff's effective acceleration anchor points, and requested further background material. Staff's experts, Drs. Hall and Newmark, submitted a further report which attempted to supply that background. Stf. Ex. 1-C at App. A. That report, entitled "Seismic Evaluation of Vallecitos Site — Basis of Earthquake Ground Motion Design Criteria," still does not supply much hard data or objective criteria to support its conclusions. *Ibid.*

The bulk of the justification for reducing peak instrumental acceleration to effective acceleration is contained in the following portion of the report (at 2-3):

Specifically, the near-field effects (as deduced from measurements and observations) as affected by the type and geometry of the structure, by soil-structure interaction and feedback, by the incoherent and complex seismic wave field, and by damping and energy dissipation mechanisms, on motions transmitted to the structure, typically have led to "design" or "effective" (acceleration) coefficients in the lower levels of buildings that

are less than the peak near free-field instrumental values. Recent unpublished studies by the TERA Corporation suggest that at least a 20 percent reduction in motion is indicated when data on buildings and free-field data are both available. Because of the foundation conditions (structural mat and a relatively rigid structure) there is probably a more significant reduction for reactor structures; the relatively large and rigid foundation mat responds to some average acceleration value associated with the travel time of the seismic waves. An analogy of some help in visualizing this interaction effect is to consider the motions transmitted to a small boat and an ocean liner in rough seas.

The situation in the case of the Vallecitos General Electric Test Reactor is somewhat, but not generally, different from that just described.

To what extent these factors were taken into account in arriving at the final figure for effective acceleration is undisclosed: Staff's experts used these factors only in an "implicit manner" and relied primarily upon their own "judgmental assessment" in arriving at their conclusions. *Id.* at 5; Tr. 1730, 1758. It would have been helpful to the Board to have heard a more detailed and quantitative exposition on the judgmental assessment.

It appears that the Hall-Newmark-Martore analyses for this proceeding relied heavily upon those experts' more detailed analyses for *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-644, 13 NRC 903 (1981). In fact, the experts arrived at the same 0.75g anchor point for an event on the Calaveras fault as had been used for the Hosgri fault in *Diablo Canyon*. Tr. 1708. It would also have been helpful to have heard a full explanation of why the same effective acceleration anchor point was appropriate for the GETR, considering that the *Diablo Canyon* facility is about 5.8 kilometers from the Hosgri fault (13 NRC at 926) as opposed to the 2 to 3 kilometer distance of GETR to the Calaveras fault. Furthermore, the Hosgri fault is associated with "smaller earthquake accelerations with definitely smaller magnitudes" and having greater return periods than the Calaveras fault. Stf. Ex. 1-B, App. A at 4. Apparently, these differences were not significant and the large margin of conservatism incorporated in the anchor point used in *Diablo Canyon* permitted use of the identical anchor point in this proceeding. However, a full presentation of these matters at hearing would have been appropriate.

2. Vertical Acceleration

Nor did I consider the Staff's and GE's testimony with regard to vertical accelerations entirely satisfactory. In its structural analyses, GE anchored the Regulatory Guide 1.60 response spectra to 0.75g horizontal accelerations (not in combination with surface offset), and used two-thirds of the horizontal vibratory motion for vertical vibratory motion. Tr. 1969. Intervenors, however, urge using

vertical ground accelerations in excess of the peak 1.74g instrumental recording for the Imperial Valley earthquake of 1979. Int. Prop. Find. 85; Int. Prop. Concl. 19.

GE and the Staff discounted the high vertical ground motion recorded at Imperial Valley on the following alleged grounds: because it was attributable to a single, anomalous data point at Station 6, within the apex where the Imperial and Brawley faults meet (Tr. 600-614, 1595); because only two anomalous data points in the Imperial Valley set exceeded two-thirds of the peak horizontal acceleration (Tr. 1720); and because, in addition to being located between the Imperial and the Brawley faults, the high readings were attributable to the soil/sediment conditions in the Imperial Valley, which is overlain by alluvium at depth that produces high velocity gradients at the approach to the surface and tends to amplify the vertical motion (Tr. 526-27, 2003). Moreover, the high vertical readings were characterized as involving high frequencies (at 10 hertz or greater), which are not of concern to structures (Tr. 1725, 2003), and as involving isolated peaks, rather than the sustained strong motion which causes damage to structures (Tr. 1725). In addition, the Board is urged to maintain the design basis vertical component of vibratory motion at two-thirds the horizontal because buildings in general are inherently strong in the vertical direction, and the rigid massive structures involved in nuclear power plants are relatively insensitive to vertical loadings. Vertical loadings are said to account for only an insignificant fraction of the total load placed on a nuclear power plant structure under design basis seismic conditions. Stf. Prop. Find. 112; Lic. Prop. Find. 36; Tr. 699-700, 1727, 2082-89.

A distinction should be made between whether the high vertical readings at Imperial Valley were attributable to anomalous data points, or whether the event itself was anomalous in that there were high vertical accelerations. I agree only with the latter interpretation. As to the data points being anomalous, the testimony was misleading. Referring to a standard reference tool not in evidence,³⁰ Seismic Engineering Program Report, September-December 1979, Geological Survey Circular 818-C, at 25-28, it is clear that vertical accelerations exceeded the mean peak horizontal accelerations at eight stations,³¹ rather than at one or two. Peak vertical accelerations were also roughly equivalent to the mean peak horizontal accelerations at five other locations.³² The vertical accelerations at five of these stations³³ exceeded the mean peak accelerations at Bonds Corner, the highest mean peak horizontal acceleration recorded. Furthermore, correlating the strong motion

³⁰ The Board distributed copies of that document to the parties and requested their opinion on it by Order dated October 7, 1981.

³¹ El Centro Imperial County Center, Array Station 5, Array Station 6, Array Station 7, Array Station 9, Differential Array, Holtville Post Office, and Parachute Test Site.

³² Brawley Airport, Calexico Fire Station, Array Station 8, Meloland Overpass on Route I-8, and Westmorland and Fire Station.

³³ Differential Array and Array Stations 5, 6, 7 and 8.

readings with the map on figure 4, page 6, of the document, containing the close-in motion stations, demonstrates a very consistent reduction in vertical readings as one moves further away in either direction from Array Station 6 (the only station within the apex of the Brawley and Imperial faults), which is the station closest to the Imperial Fault on the eastern side. Moreover, the durations of strong motion (defined in the document as peak accelerations greater than 0.1g) for the vertical accelerations are shown not to be significantly less than the durations of horizontal motion. The maximum reading at each location, of course, would relate to the highest single peak, whether given for the vertical or horizontal components, and it would be rare if more than one peak were at the maximum reading.

On the other hand, a visual observation of figures 3 and 5 (at 5, 10-16) of that document, containing copies of accelerograms from the strong motion stations, confirms that the vertical accelerations were generally at a higher frequency. Whether this higher frequency ground motion, testified (Tr. 2003) to be predominantly at 10 hertz (cycles per second), is outside of the range that can damage the facility, cannot be verified from the record because no evidence was adduced regarding the natural frequencies of the safety systems. However, I have no reason to doubt the uncontradicted testimony that it was outside the range.³⁴

Although the stations reflecting high vertical readings at Imperial Valley may not have been anomalous with regard to representing the actual wave motion in the 1979 event, the event itself was unusual. Certainly, the high vertical readings are inconsistent with worldwide readings where vertical accelerations are generally less than 60 percent of horizontals. Tr. 2006-07, 2029-31. However, it would be impossible to determine on this record whether the high vertical readings are attributable to the soil conditions and the presence of the Brawley fault, or whether, as suggested by one witness (Tr. 1647-49), the Imperial Valley event and more recent events show higher vertical readings because the strong motion instruments were closer to the rupture surface than in the prior worldwide recordings and better reflect the vibratory motion that could be expected in the near field.³⁵ With regard to the latter position, it might be noted that, in addition to the Imperial Valley event of 1979 where the peak vertical acceleration exceeded the peak horizontal accelerations, the Gazli earthquake of 1976 recorded a peak vertical acceleration of 1.3g, as compared to peak horizontal values of 0.75 and 0.67g, at a distance of 3½ to 4 kilometers from the rupture surface. Tr. 618-19; Lic. Ex. 1 at 20.

³⁴ See, however, *Diablo Canyon, supra*, 13 NRC at 975, where the natural frequencies for the *Diablo Canyon* interior containment structure and reactor pressure vessel were shown to be 10.0 hertz and 14.0 hertz, respectively, and the piping systems were shown to be in the range of 2.9 to 16.0 hertz.

³⁵ GE's chief seismological expert Dr. Kovach could not exclude the possibility that a magnitude 7.5 event on the Calaveras could generate a vertical ground motion at the GETR site greater than the 1.74g motion recorded at the magnitude 6.6 Imperial Valley event. Tr. 540-41.

In the absence of more than a few recent events in which recordings of vertical accelerations exceed horizontals and of engineering testimony that the high vertical accelerations are as capable of causing structural damage to the facility as are horizontal accelerations, I would not require a revision of the standard engineering practice of using two-thirds of the maximum horizontal component as the vertical component in the design basis of this facility. I certainly recommend, however, that the Staff review its requirements for future licensing to determine whether a ratio closer to 1, of vertical to horizontal accelerations, should be required in the design requirements where there are faults in the near field, especially where vertical displacements might be expected.

Although I accept the two-thirds ratio of vertical to horizontal, I would emphatically reject one of the arguments advanced by Staff and GE, that the two-thirds figure is justified because buildings in general are inherently strong in the vertical direction. Lic. Prop. Find. 36; Stf. Prop. Find. 112. If the facility is sufficiently strong in the vertical direction to withstand an increased vertical loading, that strength should be reflected in the facility's response to the load cases used in analysis. To reduce the seismic loading *inputs* to account for increased structural capacity courts the risk of taking double credit for the same structural capacity values, although that apparently was not done in this case. It would be a far better procedure, in my opinion, to develop the load cases on the basis of realistic seismic inputs and to correlatively utilize realistic structural values to analyze the facility.

As may be apparent, my reservations concerning the ground motion parameters recommended by Staff relate primarily to the manner in which they were presented to the Board. I have no hesitation in concluding that the preponderance of evidence supports the continued use in this case of two-thirds of the horizontal ground motion as the vertical component, in accordance with general engineering and NRC practices. Similarly, no probative evidence has been adduced that would undermine the use of 0.75g and 0.6g effective horizontal acceleration anchor points for the Calaveras and Verona faults, respectively.

II. THE ABILITY OF GETR TO MEET THE DESIGN BASIS CRITERIA

As indicated at the beginning of my opinion, I recommend the removal of the show-cause order even though I would increase the surface offset design parameter from Staff's recommended 1 meter to 2 meters. I base my conclusion that the GETR can be restarted, with the structural modifications proposed by GE and with further modifications to the flexible piping, on the evidence adduced with regard to the ability of the modified GETR's safety systems to withstand the seismic stresses postulated by GE and Staff. The stresses on the safety systems would apparently not be changed in any material manner by the increase in surface offset design

parameter from 1 to 2 meters. Notwithstanding this ultimate conclusion in favor of a resumption of operations, I must express certain reservations with regard to the manner in which the structural analyses were presented to the Board by Staff and GE (and adopted by the Board majority), and with regard to the analyses themselves.³⁶

One major point that has been obscured in the Staff's and GE's presentations (and the majority opinion) is that the modified GETR has not been shown to be structurally capable of meeting the design basis parameters. Rather, although the surface offset design parameter has been set by the Staff and GE (and adopted by the majority) as 1 meter, the structural analysis has been found to be satisfactory only with regard to a zero displacement underneath the foundation mat.³⁷

The structural analysis originally presented by GE to the Staff (in which an offset was considered as intersecting the foundation mat) contained a soil bearing capacity analysis in which the soil strength was taken to be 20 ksf. It was hypothesized by GE that an offset occurring directly underneath the GETR foundation could cantilever the reactor building but not beyond an unsupported length of 20 feet because the soils would collapse if an offset were to lift the reactor at a point closer to the center of the foundation mat. This would create a situation in which the building would be supported by the soil, resulting in minimal loadings on the foundation.

The Staff rejected the 20 ksf value for soil strength proposed by GE as being too low. Because a higher value would allow for a greater unsupported length, creating greater cantilever stresses on the reactor building than had been analyzed by GE, the structural analysis was not accepted. However, GE later submitted a fault deflection analysis which demonstrated to the Staff's satisfaction that no credible fault would surface underneath the reactor. *Stf. Ex. 1-D. Thereupon, Staff concluded that the structural analysis was acceptable. Id. at 6. I cannot accept these circumstances as amounting to the GETR's satisfying the 1-meter design basis parameter for surface displacement. Staff has not, in fact, required that the ability to withstand a 1-meter offset be included in the GETR's structural requirements.*

³⁶ Intervenors presented only one witness on the structural integrity of the GETR. The substance of his testimony was that as a structural engineer he could not guarantee that a structure such as GETR would resist the postulated earth movement without some structural damage. He offered no specific evidence that could be construed as meeting the burden of proving that the show cause order should be sustained. Tr. 2181-93.

³⁷ Presumably the reason for not requiring the structure to withstand the full postulated design basis is the provision in 10 CFR Part 100, App. A, Part VI(b)(3) which requires that the design provisions for the structure be based upon the design basis for surface faulting "unless evidence indicates this assumption is not appropriate." Apparently, because of the fault deflection analysis, discussed later, the assumption that a 1-meter offset could occur underneath the foundation mat was not considered "appropriate" and was eliminated from the structural analysis.

An alternative interpretation of GE, Staff and Board position is that the design basis is being modified because of the fault deflection analysis so as to include a 1-meter offset surfacing only beyond the perimeter of the foundation mat, with a zero offset being considered underneath the foundation mat.

Another matter obscured in GE's and Staff's presentations is in the suggestion that the total surface offset and vibratory ground motion were considered to occur concurrently in the structural analysis. Stf. Prop. Finds. 58, 59; Lic. Prop. Finds. 4; Stf. Ex. 1-B, Section A at 6; Justus and Jackson, ff. Tr. 996 at 11; Tr. 1048-53. Rather than this alleged assumption of co-seismicity, GE and Staff actually took into account considerably less than the estimated peak effective vibratory motion in conjunction with surface offset. Instead of assuming that the design basis parameter of 0.6g effective acceleration on the Verona fault would occur in combination with the postulated surface offset, GE and Staff actually analyzed only a 0.3g effective ground acceleration for a co-seismic loading.

I cannot accept the conclusion that this amounts to considering the combined loads caused by fault offset and ground vibratory motion as acting simultaneously. The Board majority is, in fact, not requiring the GETR to meet this design basis parameter. However, because of the fault deflection analyses, I agree that the co-seismic loading will not develop at the foundation mat and cannot otherwise affect the GETR's seismic safety systems if they are properly modified.

I will elaborate further on my reservations.

A. GE's Structural Capacity Analysis

GE undertook a program of investigations to demonstrate the adequacy of the concrete core or shield structure to withstand seismic events postulated for the site. The concrete core structure was analyzed to ensure its integrity once subjected to vibratory ground shaking and surface rupture offset that might be expected from the Calaveras or Verona faults. Lic. Ex. 22 at 47-48; Lic. Exs. 23-41. GE examined three load cases on the assumption (1) that there would be only a ground acceleration from an event on the Calaveras fault, and (2) that there would be ground motion in combination with a 1-meter offset from an event on the Verona fault that might result in a cantilever effect on the reactor building creating an unsupported length of part of the reactor foundation. The ground acceleration was considered as a point on which to anchor the standard response spectra of Reg. Guide 1.60. The three load cases for unsupported cantilever length and horizontal³⁸ vibratory ground motion were, as follows:

- Case 1.³⁹ — Ground Acceleration = 0.75g
- Unsupported Length = 0 feet

³⁸ GE performed the analyses using vertical accelerations of two-thirds the horizontals.

³⁹ For Case 1, GE performed a linear elastic analysis for a ground acceleration of 0.8g. The dynamic analyses were performed for 2 horizontal (northeast and northwest) components and the vertical components (at ½ the horizontal) independently. Lic. Ex. 37, p. 2. The analysis for Case 2, involving a ground acceleration of 0.3g and unsupported length of 17 feet, was performed concurrently for three

(Continued)

- Case 2. — Ground Acceleration = 0.30g
- Unsupported Length = 17 feet
- Case 3. — Ground Acceleration = 0.0g
- Unsupported Length = 20 feet

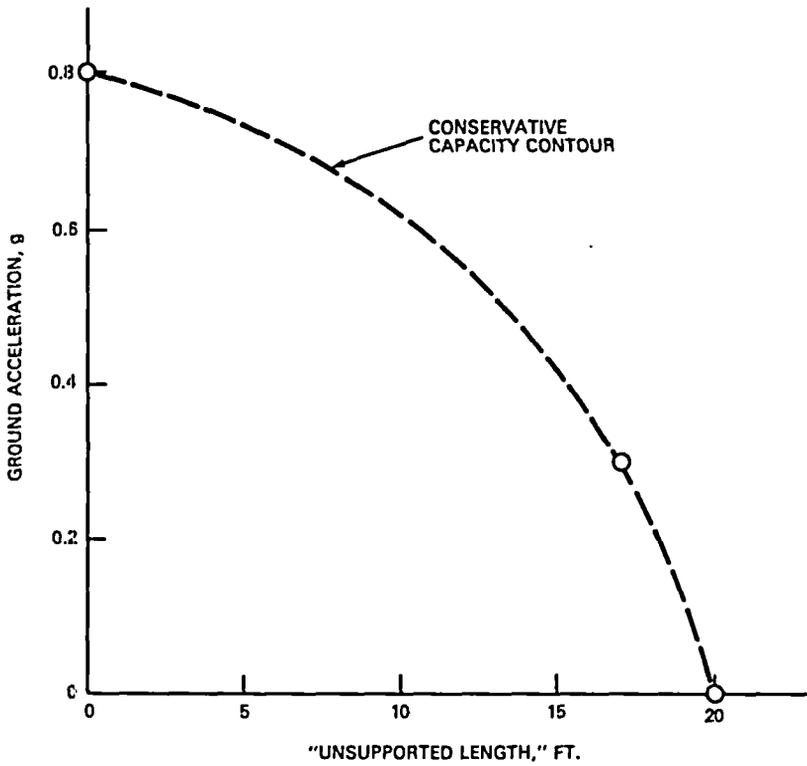
From these three load cases, which GE's analysis indicated the plant could withstand sufficiently for a safe shutdown, GE drew a curve representing a capacity contour of the plant from the 0.75g point on the vertical "Ground Acceleration" axis to 20 feet on the horizontal "Unsupported Length" axis, and passing through the coordinates of 0.3g and 17 feet. Lic. Ex. 34, Fig. 11; Lic. Ex. 39, Fig. 1. See Fig. 1 below.

The 20 feet of unsupported length was determined to be the maximum unsupported length of the 72-foot wide reactor building that could be supported by the soil before the soil collapsed, based upon the assumed 20 ksf strength of soil. Once the soil collapsed and the reactor settled, it would not be in a cantilevered position but would be supported by the soil and, according to GE, would be in a condition that could easily be tolerated without distress in either the soil or the structure. Lic. Ex. 38 at 3-4. GE performed a series of analyses of soil pressure underneath the reactor building for different combinations of horizontal ground acceleration and unsupported lengths of reactor building. The soil pressures examined were calculated to be the result of the vertical weight of the structure and the overturning moment produced by the horizontal seismic forces. The purpose was to determine the maximum load combinations that the soil could withstand before collapsing and permitting the reactor building to settle.

As a result of the soil pressure analyses, GE plotted a band to represent the limits of soil bearing capacity using the same axes (*i.e.*, ground acceleration on the vertical axis, and unsupported length on the horizontal axis) it had used to draw the capacity contour curve for the structural capacity of the reactor building. (GE used a band for the soil pressure, rather than a line, to represent the load combinations on the soil between when there would be incipient local yielding of the soil and when there would be a total collapse of the soil.) Lic. Ex. 38. See Fig. 2, below. By plotting the capacity contour and the soil pressure failure band on the same graph, GE attempted to show that because the capacity contour was outside of the soil pressure band, the soil could not withstand any loading that would exceed the capacity of the plant. Therefore, no cantilever could develop that would exceed the plant's structural capacity.

The NRC Staff did not accept these analyses. It determined that they had been based upon a lower bearing capacity for the soil beneath the foundation than was

components of earthquake motion and indicated that the vertical component (at $\frac{2}{3}$ the horizontal) influences the principal stresses on the facility by about 10%. GE, therefore, concluded that it was unnecessary to make additional stress analyses for the three components of earthquake motion acting concurrently at 0.75g and that it could, instead, use the 0.8g analysis of the independent components as equivalent to a 0.75g analysis of the three components acting concurrently. *Id.*, pp. 3-4.



**FIGURE 1. Capacity Contour for Combined Loading
(Reproduced from Figure 11 of Lic. Ex. 34)**

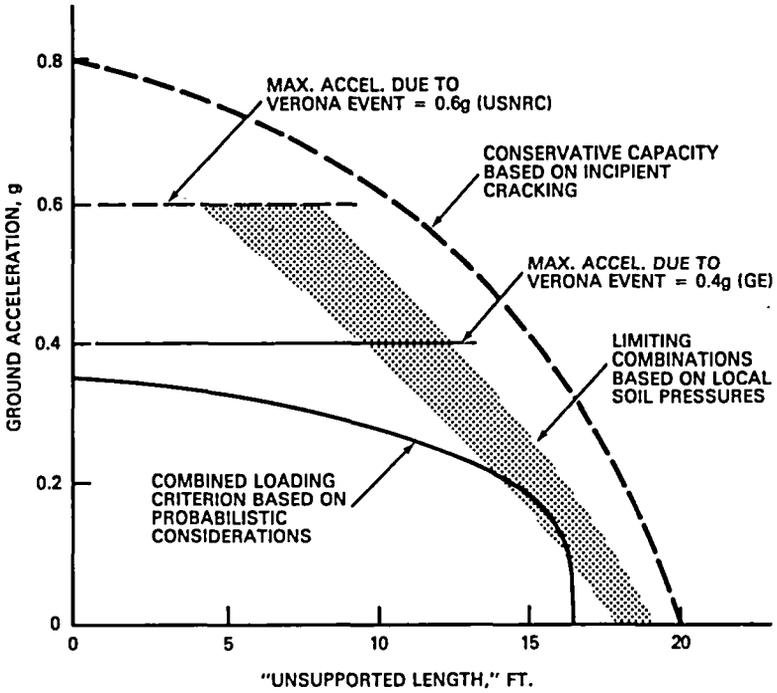


FIGURE 2. Loading vs. Capacity (Reproduced from Figure 6 of Lic. Ex. 39)

justified and that a higher value of soil bearing capacity would likely result in a larger unsupported cantilever length of the foundation mat than had been analyzed by GE. Stf. Ex. 1-D. Although GE suggests otherwise (Lic. Prop. Finds. at fn. 61, pp. 132-33) no evidence was offered that higher soil bearing capacities were successfully analyzed by GE or that the Staff had found GE's conclusions acceptable because higher values had been analyzed.⁴⁰

I question GE's structural analysis on grounds other than use of an insufficient 20 ksf value for soil strength. The only combination loading (unsupported length plus vibratory ground motion) analyzed by GE was at 0.3g vibratory motion and 17 feet unsupported length. In the face of the Staff and GE's position that the design basis vibratory motion and surface offset were taken into account concurrently, it is surprising that the structural analysis did not take into account loadings attributable to a 0.6g vibratory motion and 20-foot (or greater) unsupported length.⁴¹ One justification for considering less than the design basis parameters acting concurrently on the structure was GE's conclusion that a combination of ground motion and unsupported length for cantilever loading at the "worst cases" (*i.e.*, design basis) are "unrealistic and overly conservative." Lic. Ex. 34 at 2. GE, therefore, selected the combination of 17 feet unsupported length and 0.3g horizontal ground acceleration "since it is conservative from probabilistic and physical points of view." *Id.* at 3. No evidence was offered to demonstrate the reasonableness of this probabilistic conclusion.

As to a "physical" rationale, GE had earlier attempted to justify to Staff the use of less than the combined design parameters for vibratory motion and surface offset on the ground that evidence from earthquake studies indicates that fault displacement takes place only after the occurrence of the strong vibratory ground motion. Lic. Ex. 23 at Part 1. (If they were to take place concurrently or the displacement were to take place first so as to place the reactor in a cantilevered position before the onset of the maximum vibratory motion, the maximum loadings on the reactor would have to be taken into account simultaneously.) If GE relied upon the theory that the maximum vibratory motion would occur before displacement to justify using less than the peak vibratory motion from the Verona fault in combination with the ground displacement, that theory would appear to

⁴⁰ Legally no inferences should be drawn from the fact that no further analysis was presented to the Board with regard to a strength of soil exceeding 20 ksf. Nevertheless, I would be surprised if higher values were not analyzed and even more surprised that, if they were and the structural analysis were favorable, GE would not have offered the study into evidence.

⁴¹ It is perhaps even more surprising that Staff did not inform the Board that the design basis parameters were not taken into account concurrently and even suggested the contrary. See Stf. Prop. Find. 185, which states, *inter alia*:

185. Analyses of the reactor building for the effects of the design parameters related to the Verona fault were performed by combining the effects resulting from the vibratory motion with those resulting from surface rupture.

Staff neglects to inform us that the "effects" of the design parameters are something other than the design parameters themselves.

have been undermined at hearing. The USGS experts testified that the ground motion and surface displacement were simultaneous at San Fernando, that co-seismicity is the rule for strike-slip and normal dip-slip faults, and that there is very little data on which to form a general opinion with regard to reverse dip-slip faults (as is hypothesized for the Verona fault). Tr. 1051-53.

Even assuming the propriety of using less than maximum vibratory ground motion in combination with cantilever loading, GE's capacity contour is less than illuminating for another reason. I would have considerable difficulty in accepting a curve that is drawn through only 3 points, two of which are on the respective vertical and horizontal axes. One represents only vibratory ground motion, and the other represents only unsupported length. More specifically, I do not see how an assumption can be made that, because the structure can withstand a horizontal ground acceleration of 0.75g in a non-cantilevered position and can withstand a 0.3g vibratory motion at an unsupported length of 17 feet, the structure can withstand any ground motion in excess of 0.3g while in a cantilevered position. It appears to me that the dynamic loadings for vibratory ground motion represented by the vertical axis and the static loadings for the unsupported cantilever lengths represented by the horizontal axis appear too dissimilar to permit use of that simple curve drawn by GE. More importantly, the non-uniformity of the reactor building as far as weight distribution and varying strengths at different locations would suggest some caution in treating the building as a simple cantilever whose loadings increase proportionately with increases in unsupported length. Many more curves than the one applied by GE can be used to connect the three points.⁴²

Be that as it may, the Staff's rejection of the structural analyses served as the impetus for GE's fault deflection analysis, which appears to make the deficiencies in the bearing capacity analysis immaterial.⁴³

⁴² GE later adjusted the curve shown in Figure 2, above, by flattening the curve at the top (at 0.75g). This was done by assuming that short unsupported lengths will result in a very small loss of support and, thus, will have little influence on concrete stresses. The flattened curve suggested that the reactor had the same capacity to withstand a vibratory motion of 0.75g at approximately a 7-foot unsupported length, as it had at the zero unsupported length at which it was actually analyzed. See Lic. Ex. 39 at 3 and Fig. 3; Lic. Ex. 41.

⁴³ At its meeting of November 6-8, 1980, the ACRS reviewed GE's request to restart and operate GETR. Stf. Ex. 2 (ACRS recommendation of November 12, 1980). The ACRS had before it at that time Staff's draft of its October 27, 1980 SER in which original page c-8 of Part II supported GE's soil pressure/capacity contour analysis and indicated that the evaluation supporting a favorable conclusion was attached as App. B. The Staff's cover letter indicated that the SER was being given only draft status because the Staff had not yet completed its evaluation of GE's structural analysis. Only a cover page for App. B was included in the draft SER with an indication that the Appendix would be provided by separate letter.

The ACRS recommendation seems to be based on a belief that the Staff required the GETR to be capable of withstanding a ground level acceleration of 0.6g simultaneously with a surface displacement of 1 meter (a load case which apparently had never been analyzed). The ACRS letter recommended that the GETR be restarted and operated subject to the resolution of the issue involving the characteristics of the soil beneath the GETR foundation. The ACRS position was that "plant as modified should be able to withstand the postulated seismic events with no significant release of radioactive material." There is no

(Continued)

B. The Fault Deflection Analysis

GE's fault deflection analysis was based upon the theory that the heavy weight of the reactor would interact with the soil and distort it so as to deflect any fault from surfacing at the reactor foundation. According to GE's theory, if a heavy structure such as GETR were founded on rock and a fault moved to intersect the foundation, the foundation would be suspended or loaded in a cantilevered position. If, on the other hand, a heavy structure such as GETR were founded in soft mud or loose sand, the same fault motion would not suspend or cantilever the foundation. The weight of the structure would cause the soil to flow and would deflect the fault around the reactor foundation, *i.e.*, the fault would seek the path of least resistance. The GETR is founded on neither hard rock nor soft mud or sand. Rather, it is founded on clay, sand and gravels, the properties of which lie somewhere between hard rock and soft mud. GE, therefore, presented its deflection analysis to demonstrate that all fault planes which intersect the foundation would require a greater force to failure than all fault planes which did not intersect the foundation, and that the fault would deflect around the foundation.

GE's deflection analysis assumed that the GETR site is geologically capable of thrust faulting, with thrust fault angles dipping from 10 to 45°, dip being measured at or near ground surface. The analysis visualized that the thrust fault forms a passive Rankine wedge of soil that is pushed by a major principal stress. The inputs into the calculations were the weight of the soil, the strength properties of the soil, the location of the groundwater table and the weight of the reactor. The principal special condition that exists at GETR is the weight of the reactor, which produces a downward load of 4,000 lbs. per square foot. Lic. Ex. 20 at 4; Pichumani ff. Tr. 996 at 5; Tr. 2289; Lic. Ex. 1 at 84-94.

The importance of this fault deflection study should not be underestimated. Although Staff apparently believes otherwise (Tr. 1701-07, 1775-83), the fault deflection analysis, if accepted, would moot the question of the size of the offset that can be withstood by the reactor building. Except for certain flexible piping used for the fuel flooding system (see Lic. Ex. 30 at 2-4 to 2-5), which is located outside of the reactor building and was analyzed only at a 1-meter surface displacement, it does not appear that any other structure or equipment that is related to the seismic safety of the GETR is located outside of the reactor building and would be affected by an offset that deflects around the building. It is likely that the flexible water piping that might be affected by an offset surfacing outside of the

indication that the Staff ever requested a further recommendation from the ACRS with regard to restarting the GETR in the circumstance of not having to satisfy the design basis criteria (1) because the design basis values for ground motion and surface displacement from the Verona fault were never taken into account concurrently and (2) because the fault deflection analysis was used in place of requiring the structure to fully withstand the postulated seismic event.

reactor foundation could easily be modified to accommodate a greater displacement of 2 meters. With regard to the reactor building itself, the deflection around the building would preclude the offset from intersecting the foundation mat, but not the portion of the containment structure (the outer ring wall) beneath the ground surface. However, as more fully discussed below, the ring wall is not considered a safety structure whose integrity must be maintained during a seismic event.

Notwithstanding the Staff's acceptance of GE's deflection study and the absence of any intervenor testimony critical of the study, I have some reservations. Although it had been testified that GE's method of wedge analysis is based on sound soil mechanics principles (Pichumani ff. Tr. 996 at 5), the only known instance of this phenomenon, of a fault deflecting around a structural foundation during a seismic event, was a bank vault in Nicaragua where this phenomenon was believed to have occurred. Lic. Ex. 1 at 89-90; Pichumani ff. Tr. 996 at 7-8; Tr. 467-69, 1610-11. Even that one instance can only be *theorized* as being a fault deflection due to the weight of the vault, rather than considered as a definite observation that this phenomenon occurred. Tr. 1612. Moreover, none of the witnesses appearing at the hearing had actually observed such an occurrence or could cite another example where this phenomenon might have occurred. Tr. 1610-13, 1629-33, 2035-36, 2269-72. GE had made considerable attempts to find some evidence supporting this deflection analysis but was not successful. Tr. 2271-72. In contrast, the San Fernando earthquake of 1971 was in large part a thrust faulting event (similar to what could be expected from the Verona fault) and came up under quite a few buildings. In each case, the fault was not troubled at all by the existence of the structure and simply went through the structure or lifted it and broke it in half. Tr. 2275.

The deflection analysis, itself, raises some questions about its reliability. The favored planes (those requiring the least force to failure) immediately outside of the foundation appear, for some of the postulated Rankine wedges, to require on the order of only about 10% less force than the failure planes underneath the reactor. Lic. Ex. 1 at Fig. 51, p. 91; Lic. Ex. 20 at Figs. 4-7. GE had varied the locations for the failure planes at an assumed wedge depth of 70 feet below the reactor foundation slab. Stf. Ex. 1-D at 4. The Staff reviewed the analysis and performed additional calculations for an assumed wedge depth of 100 feet and apparently found the differences between the failure planes underneath the reactor and those alongside of it even less, so as to cause Staff to condition its approval upon the presence of a 21-foot high surcharge within about 170 feet of the reactor building. *Id.* at 4-5. Considering that the degree of certainty in soil mechanics is considerably less than in structural engineering because of the variability of natural materials compared to steel and concrete (Tr. 2284), one might question whether the small differences between the postulated failure planes are sufficient to allow for a high degree of confidence that the deflections will occur as predicted.

Furthermore, certain of the assumptions implicit in the study are open to question. Unlike the allegedly analogous bank vault in Nicaragua which was buried in lightly cemented gravels and uncemented sands (Lic. Ex. 1, Fig. 50, p. 90), GETR is underlain by very dense clay, sand and gravel with occasional layers of very dense sandy and/or gravelly clay to a depth of 70 feet. Stip. para. 2.m. There is no indication in the record that GE's study took into account any inhomogeneities in this relatively cohesive soil, including even the possibility of existing shears within the postulated 70-foot depth of wedge that might influence the direction of a failure plane. If, for example, an existing shear shallower than the 70-foot depth were directed at the GETR foundation, the force required to move the failure plane along the existing shear might possibly be less than the force needed to create a new plane of failure.

GE's fault deflection analysis appears also to conflict with GE's October 31, 1980 analysis (Lic. Ex. 19) that was submitted to the NRC to further support the soil pressure/contour curve analysis that the Staff had begun questioning at that time. There, GE had postulated a fault plane (A) intersecting the foundation and a shifting of movement to fault plane (B), also intersecting the foundation. See Fig. 3, below. As stated in the report (at 7-8):

However, shifting of movement to (B) causes a new (and also untenable) load distribution, perhaps causing the most favored fault plane to return to (A). Here this analysis breaks down, for it does not model the curve failure planes, soil-structure interaction, etc. that define the true developing pattern of deformation.

GE concluded with regard to this Rankine wedge analysis (corrected p. 11):

Simplified wedge analysis of faulting beneath the reactor indicates a tendency of faults to steepen in such a manner that they erupt on the near (right) side of load concentrations. This suggests that faults surfacing 15-20 ft. from the left side of the reactor foundation evolve into ground deformations which tilt the reactor to the left, rather than lifting it without rotation.

These observations suggest that, in certain cases, the favored fault planes shift to the right within the boundaries of the reactor foundation but cannot be further analyzed to determine their precise final locations. They may even return to their original locations. Apparently, however, GE must have resolved these uncertainties by its further modelling of the Rankine wedges in the fault deflection analysis upon which it now relies.

While the conclusion of this further analysis is apparently justified, that the favored fault planes lie outside of the reactor foundation, the small differences in force values between the favored failure planes outside of the foundation and those which intersect the foundation, the possible inhomogeneities in the soil, the lack of knowledge about possible existing shears beneath the reactor, the lack of historical observations to support this postulated phenomenon, the absence in the literature

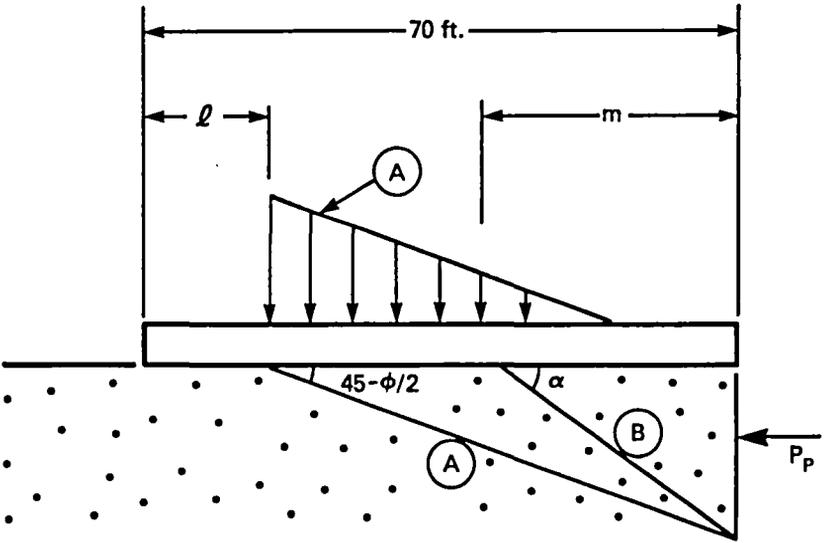


FIGURE 3. Rankine Fault Model (Reproduced from Figure 5 of Lic. Ex. 5)

of any similar analyses upon which structural engineers have relied, and the uncertainties expressed by GE in its October 31, 1980 report concerning the anticipated paths of the failure planes, suggest some caution in relying upon this analysis to eliminate the possibility of a surface offset from the Verona fault intersecting the foundation.

Presumably, Staff reviewed GE's fault deflection analysis with the requisite caution and considered all of the matters on which I have expressed my concern.⁴⁴ Had the Board not been satisfied at hearing with Staff's review, it would have questioned GE and Staff at length on the structural analysis, as it did on the geologic analysis. I raise these matters at this point only to place the structural analysis in its proper perspective, without the appearance of certainty suggested by the majority findings. However, none of my reservations can, or are intended to, indicate disagreement with the majority's ultimate conclusion that the GETR's safety-related structures, systems and components, as modified, meet the requirements to assure that the reactor can be safely shut down and maintained in the safe shutdown condition during and after the design basis seismic event. The burden of proving otherwise has clearly not been met.

It is, perhaps, unfortunate that Staff chose not to elaborate fully at hearing upon what may have been its own reservations on the fault deflection analysis and the steps it took to resolve them. Nor did Staff even explore at hearing its rejection of the bearing capacity analysis. However, the Commission's regulations do not require a comprehensive presentation by Staff, and Staff has satisfied its regulatory requirements to the letter.

In view of Staff's rejection of the soil pressure bearing capacity analysis, I find very curious Staff's Proposed Findings 79 and 93, which suggest that the Staff accepted the assumption of surface offset as a "conservatism." Prop. Find. 79 states:

79. A final conservatism in the Staff's proposed design is the consideration of surface offset even though geotechnical engineering considerations indicate that a fault will deflect around the reactor.

Staff's Proposed Finding 33 states, *inter alia*:

Accordingly, the Board agrees that the assumption of surface offset occurring beneath the GETR is conservative in light of the above geotechnical engineering considerations.

Obviously, Staff did not assume that the offset will occur beneath the reactor. Otherwise, it would not have recommended the restart of GETR because Staff did not accept GE's structural analysis as demonstrating that the GETR could withstand Staff's design basis parameters for surface displacement and effective acceleration. Staff accepted the fault deflection analysis as the *sole basis* for

⁴⁴ Had Staff discussed these matters at hearing and indicated its bases for resolving them, I would not have to raise them at this juncture. See my discussion of the role of Staff in Part III, *infra*.

assuming that the GETR could maintain its structural integrity in the face of the postulated surface displacement design basis, and did not also assume as a “conservatism” that an offset could occur under GETR.

Similarly, it is because of the fault deflection analysis that I concur with the Board majority that the GETR can be successfully modified to be safely shut down in the event of the design basis earthquake on the Verona fault.

C. Containment Failure

A deflection of an offset from the Verona fault, as postulated in GE’s fault deflection analysis, would not eliminate the possibility of damage to the outer ring wall of the containment building. In addition to considering a possible cantilever effect upon the facility of a ground offset from the Verona fault, GE also considered a situation in which the offset would bypass the foundation mat on either side of the reactor building and create horizontal soil pressure loading on the exterior ring wall. In either case (where the offset goes beneath the reactor building and surfaces on the far side, or surfaces on the near side without going underneath the reactor building), the postulated one-meter offset from the Verona fault was considered capable of cracking and deforming the ring wall between the basement and first floor levels. Lic. Ex. 22 at 56-60, Lic. Ex. 25 at Parts 3 and 4; Lic. Ex. 4. However, because GE concluded (with Staff’s agreement) that the core structure does not require the outer ring wall for its support, the postulated cracking and deformation were considered acceptable.⁴⁵

In the SER of October 1980 (Stf. Ex. 1-C at C-3), Staff indicated that the GETR, under the proposed modifications, would meet the acceptance criteria consistent with 10 CFR Part 50, Appendix A, Criterion 2, notwithstanding that the containment shell might not maintain its integrity under the postulated seismic event. On Board questioning, GE’s structural witness Gilliland indicated that GE’s Final Safety Analysis Report had relied upon maintaining the integrity of the containment for certain of the design basis accidents described therein. Tr. 1967.

Staff agreed that the FSAR relied upon maintaining containment integrity, but argued that maintaining the integrity of the containment in the event of a design basis seismic occurrence was not necessary because a breaching of the containment in the seismic event would not result in releases beyond the guidelines permitted by the regulations. Tr. 2211-21. Apparently, a seismic event would not

⁴⁵ It is perhaps because of the situation involving offsets that might surface to the sides of the reactor building that Staff Witness Hall indicated that the Verona offset need not surface beneath the reactor, but need only be in near field to cause damage to the reactor. Tr. 1748. Why he limited his endorsement of the structural capacity of the GETR to withstanding only a one-meter offset (*Ibid.*), in view of the Staff’s acceptance of the fault deflection analysis and the assumption that the outer ring walls are not necessary for the safety of the facility, was not explained.

cause releases beyond those guidelines, as a design basis accident might, because the postulated earthquakes would initiate the seismic scram system that would immediately trip the reactor. Some design basis accidents might not initiate a reactor trip. Tr. 2218-19; Stf. Ex. 1-C at A-2.

Upon further questioning by the Board, Staff conceded that it had not considered an occurrence of a design basis accident for which the containment might be needed with the simultaneous occurrence of a postulated seismic event. It had not even considered the occurrence of a design basis accident (such as at Three Mile Island), which relied upon the containment to prevent excessive releases, with the *subsequent* occurrence of a seismic event that would breach the containment. Tr. 2226-36. Staff further conceded that not considering the design basis accident in combination with the seismic event did not comply with 10 CFR Part 50, Appendix A, Criterion 2. *Ibid.*

Criterion 2 states, as follows:

Criterion 2—Design bases for protection against natural phenomena. Structures, systems, and components important to safety shall be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunamis, and seiches without loss of capability to perform their safety functions. The design bases for these structures, systems, and components shall reflect: (1) Appropriate consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area, with sufficient margin for the limited accuracy, quantity, and period of time in which the historical data have been accumulated, (2) appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena, and (3) the importance of the safety functions to be performed.

Criterion 16 also appears relevant and states, as follows:

Criterion 16—Containment design. Reactor containment and associated systems shall be provided to establish an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment and to assure that the containment design conditions important to safety are not exceeded for as long as postulated accident conditions require.

Staff indicated that, as a legal matter, compliance with the General Design Criteria established by Appendix A to Part 50 was not necessary for the GETR since the Criteria apply only to water-cooled nuclear power plants. Tr. 2228. As a further substantive explanation of why the Staff chose not to consider the accident and seismic events simultaneously, Staff referred to the differences between the GETR and nuclear power plants, such as power levels, fission product inventory, the seismic scram system at GETR, the lack of need for complex systems to mitigate accidents at GETR, and the lower operating temperature at GETR. Tr. 2229. Finally, Staff indicated that it felt no need to postulate very low likelihood events occurring simultaneously. Tr. 2230.

Although Appendix A to Part 50 does not further define “appropriate combinations” (of the effects of accident conditions with the effects of natural phenomena), referred to in Criterion 2 (2), I would agree with Staff that they would include a consideration of the design basis accidents for which the containment is necessary in conjunction with the postulated seismic events which would breach the containment. Consequently, even under the Board majority’s geologic design bases the containment would be breached and General Design Criterion 2 would not be met. Similarly, Criterion 16 establishes an absolute requirement for a leak-tight reactor containment and would appear to be violated by adopting seismic design parameters that permit the containment to be breached. Therefore, if Appendix A to Part 50 applies to GETR, the reactor could not restart.

I and my fellow Board members agree with Staff and Applicant that Appendix A to Part 50 and related Appendix A to Part 100 do not apply to the GETR.⁴⁶ Although suggested otherwise by GE (Lic. Prop. Concl. 1-11), the GETR is a “testing reactor,” as defined by 10 CFR §50.21(c) because its original license was issued under Section 104c of the Atomic Energy Act. As a testing reactor, it would be subject to the general provisions of Parts 50 and 100 of the Commission’s regulations. However, 10 CFR §50.34(a)(3)(i) and 10 CFR §100.10(c)(1) apply Appendices A of their respective Parts only to “nuclear power plants”—not to testing reactors. Similarly, Appendices A to Parts 50 and 100, by their own language, appear to exclude from their ambit any nuclear reactors that are not necessary for electric power generation.

Furthermore, the General Design Criteria for Nuclear Power Plants, Appendix A to Part 50, were adopted on February 20, 1971. 36 *Fed. Reg.* 3256. The Seismic and Geologic Citing Criteria for Nuclear Power Plants, Appendix A to Part 100, were adopted on November 13, 1973. 38 *Fed. Reg.* 31281. Neither of the Appendices A applies to licenses issued prior to its effective date in the absence of a specific requirement by the Commission that the facility be backfitted to meet the requirements of the Appendix.⁴⁷ See 10 CFR §§50.109 and 100.2(a).

We are concerned in this proceeding with a license issued on January 7, 1959, more than 10 years before the effective dates of Appendices A to Parts 50 and 100. Although the license was due to expire on October 6, 1976, GE filed an application for renewal on October 20, 1975, almost a year before the expiration date. Under 10 CFR §2.109, the existing license is deemed to continue until an application for renewal, filed at least 30 days before the expiration date, has been ruled on.

⁴⁶ The entire Board joins in this portion of the concurring opinion which indicates why Apps. A to Parts 50 and 100 do not apply to GETR.

⁴⁷ An argument can be made that, by requiring a determination of the proper “seismic and geologic design bases” for the GETR, a term of art indigenous to Apps. A of Parts 50 and 100, the Commission intended to apply those Appendices *in toto* to GETR. See Commission Memorandum and Order of February 13, 1978. There is, however, no reason to suppose that the Commission intended to single out this testing reactor for the more stringent requirements imposed upon nuclear power reactors.

Consequently, the show cause order applies only to the existing license, to which Appendices A to Parts 50 and 100 would not apply because they are not retroactive, even if the facility were a nuclear power plant (rather than a testing reactor). The Board, therefore, concludes that the failure of GETR to meet the requirements of General Design Criteria 2 and 16 in the event of a design basis earthquake does not preclude the resumption of its operations.

As a non-technical person, I must confess some difficulty in accepting the proposition that the containment structure is totally unnecessary for maintaining the integrity of the concrete core structure containing the bulk of the seismic safety system. Nevertheless, the uncontradicted evidence presented by the qualified experts in this area is to that effect. They had even conservatively assumed that the concrete core structure would have to resist the seismic forces induced by the weight of all structural components exterior to the core structure (including the weight of the collapsed containment walls and floor slabs they supported), to survive the design basis earthquake. See Lic. Ex. 25 at Part 3.

I conclude, therefore, that the structural modifications proposed by GE would be sufficient to withstand the design basis parameters I recommend if GE can modify the flexible piping, discussed above, to withstand a 2-meter surface displacement, instead of the postulated 1-meter displacement adopted in the majority opinion.

III. ROLE OF THE STAFF

Staff's presentation at the hearing raises some troubling questions regarding its role in the adjudicatory process. Previously, it had been my impression that Staff presents itself in these proceedings as a purveyor of objective truth, rather than as a mere advocate — in the words of GE's counsel, a "guardian of the record." Prehearing conference of January 5, 1981 at Tr. 167. See also the Board's discussion at hearing of the role of the Staff's experts, at Tr. 989-91.

In my opinion, however, Staff did not meet those expectations. It offered into evidence an expurgated version of its Geosciences Branch Safety Evaluation Report, from which substantial portions of expert analysis were deleted because they did not support Staff's changed conclusions. Stf. Ex. 1-A; Tr. 986-89. It conducted a minimum of cross-examination of GE's experts, despite the obvious competence of Staff counsel and the reservations that had earlier been expressed in the Staff reports about certain of GE's positions. Similarly, Staff presented very little direct testimony to support those previously expressed reservations about GE's case. Especially in the area of the GETR's structural capability to withstand the postulated design basis events, Staff's direct presentation was meager. From the testimony given, it would be difficult to discern that Staff had rejected GE's bearing capacity analysis and had accepted in its stead the fault deflection

analysis.⁴⁸ It is only because of the presence of the USGS experts, Drs. Earl Brabb and Darrell Herd, that the testimony was illuminating with regard to the geologic design parameters. However, they participated in the hearing only because of the insistence of the Licensing Board. Staff had intended that they not appear as witnesses in the proceeding although they had conducted Staff's geologic investigations together with NRC's Dr. Jackson. Prehearing conference of January 5, 1981, Tr. 155-61. Even Staff's disclosure that the modified GETR would not meet the General Design Criteria of Appendix A to Part 50, a matter that must have been known to Staff before the hearing and had been stated otherwise in its October, 1980 SER (Stf. Ex. 1-C at C-3), was made to the Board only after persistent Board questioning. Tr. 2211-20, 2226-34.

On the record before us, it is difficult to distinguish between Staff's presentation and that of a typical private litigant, whose counsel might be expected to present only evidence favorable to its position and to caution its witnesses not to volunteer unfavorable information or opinion.

At the same time, we are now faced with some recent dicta⁴⁹ of the Appeal Board that would severely restrict the ability of licensing boards to call their own experts. Under the scheme envisioned by the Appeal Board, before an adjudicatory Board can call its own outside experts it must give the Staff every opportunity to explain, correct, or supplement its testimony, and then must articulate good reason to suspect the validity and completeness of the Staff's work. See fn. 49 *supra*, *Summer*, ALAB-663, 14 NRC at 1156. Even then, a licensing board may call independent consultants only in "that most extraordinary situation in which it is demonstrated beyond question that a Board simply cannot otherwise reach an informed decision on the issue involved." 14 NRC at 1146, 1163.

If the Commission adopts as Commission policy this unprecedented⁵⁰ scheme for restricting the right of a licensing board to call its own experts, licensing boards will have to rely even more upon Staff's willingness to volunteer information and opinions that may not fully support its ultimate conclusions. Where Staff is not so willing, as it apparently was not in this case, the ability of a licensing board to do

⁴⁸ Staff's discussion of the non-acceptability of GE's bearing capacity analysis is confined to a carefully worded paragraph in Staff witness Pichumani's prefiled testimony (ff. Tr. 996 at 4). The "difference" between GE's figure of 20 ksf for soil strength and Staff's higher value is noted. Not mentioned is the fact that the soil strength value was critical to the entire bearing capacity analysis and that Staff *rejected* the analysis because of its difference with GE on that value.

⁴⁹ *South Carolina Electric and Gas Co., et al.* (Virgil C. Summer Nuclear Station, Unit 1), ALAB-663, 14 NRC 1140 (1981). ALAB-663 contains a series of Appeal Board memoranda addressing NRC Staff's motion for directed certification that challenged the Licensing Board's decision to call its own seismic experts. Although it expressed disapproval of the Licensing Board's decision, the Appeal Board let the Licensing Board's order stand, and dismissed Staff's motion to overturn it. The Commission declined to review ALAB-663. CLI-82-10, 15 NRC 1377 (1982).

⁵⁰ See the Licensing Board's opinion in *Summer, supra*, LBP-81-47, 14 NRC 865, 872-3 (1981), which reviews the precedents and demonstrates their unanimity in upholding the unrestricted right of trial courts, administrative judges and NRC licensing boards to call their own experts — a common law practice that dates back to the 14th century.

more than suspect the validity and completeness of the Staff's work, much less articulate good reasons for its suspicion, is doubtful.

It appears to me that the performance of Staff at this hearing was inconsistent with the premise underlying the Appeal Board's recent pronouncements. That premise, that the Staff can be relied upon to disclose fully all of the facts and considerations that are apparent to its personnel, even those which may contribute to reservations regarding Staff's ultimate conclusions, has not been validated in this case. It appears doubtful to me that Staff considers such full disclosure as its obligation. Nor has it been shown to my satisfaction in this proceeding that the witnesses Staff intended to produce for hearing were those that were most qualified to analyze the issues before the Board, even of those experts available to Staff.

IV. CONCLUSION

Except for the matters specifically discussed in my opinion, I agree with the findings and opinion adopted by my fellow Board members. For the reasons discussed above, I dissent from only their geologic design parameter of a 1-meter offset from the Verona fault, which I would establish at two meters. Because of that difference in design basis, I would condition my approval of the structural ability of the modified facility to withstand the postulated seismic design basis events upon a modification of the flexible fuel flooding piping located outside of the reactor building to withstand the 2-meter surface displacement.

Herbert Grossman, Chairman
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,
this 16th day of August 1982.

VIII. COMMENTS ON THE SEPARATE OPINION⁵¹

We believe differences between the Majority and Separate Opinions stem primarily from the weights given to the testimony by various witnesses as well as approaches employed in estimating the likelihood of, extent of, and hazards caused by, future possible seismic events at the GETR site.

⁵¹ By the Board majority.

I. GEOLOGIC AND SEISMIC DESIGN BASIS

The Staff's recommended design parameter of a 1-meter surface displacement from an event on the Verona fault is rejected in the Separate Opinion and a 2-meter surface displacement would be adopted in its stead (Sep. Op. at 656).⁵² The rejection is based, in part, upon disagreement with the Staff's reevaluation of its previous position regarding appropriate design parameters.

It is stated in the Separate Opinion that "Upon the urging of a member of the Advisory Committee on Reactor Safeguards, to which Staff had referred its recommendation, Staff reversed its position of not accepting probabilistic studies as a significant element in formulating its conclusions." (Sep. Op. at 656)

The Staff had previously recommended that a 2½ meter maximum surface displacement be used as a design parameter (Stf. Ex. 1A). Based upon a review of additional information, including probabilistic analyses, Staff modified its position and recommended a 1-meter displacement design parameter (Stf. Ex. 1B). Probabilistic analyses showed that maximum displacements are extremely unlikely to occur. The Staff concluded that appropriately determined mean values of relevant geologic analogies may be used to establish the design parameter. In particular, Staff relied upon the means of the surface displacements from the 1971 San Fernando event; the characteristic offsets of from 2 to 3 feet observed in the trenches at the GETR site; the probability that in a future event the surface displacements would be distributed between different splays in the Verona fault zone rather than on a single splay beneath the reactor; the probability that the Verona fault would not rupture over its entire length based on comparisons with worldwide earthquake data. Justus and Jackson, ff. Tr. 996 at 8-11; Tr. 1387-95, 1888-92.

In the Separate Opinion, the probabilistic analyses are given little weight. We are of the opinion that the use of probability analyses in the determination of design parameters is proper. We believe the Staff's consideration of such analyses is appropriate. That such consideration may have been "almost mandated" by the ACRS is of little concern. Independent consultants, employed by the Licensee and the Staff, have performed probabilistic analyses and have obtained similar results. A simplified expression for computing the probability (P) that an offset will occur beneath GETR is⁵³

$$P = N/t \times 1/N \times 72 \text{ ft}/1320 \text{ ft}$$

The concern, expressed in the Separate Opinion, which led to the suggestion that the probabilistic analysis should be given little weight, relates to the mathematical

⁵² References to the Separate Opinion are cited as Sep. Op. with the appropriate page number. An example is Sep. Op. at 656.

⁵³ A more rigorous expression for the probability is given in Lic. Ex. 14. Also see Sep. Op. at 659-60 for definition of parameters.

form of the second term in the above expression. In general, the probability that an event A will occur in a succession of N total events is, by definition, equal to N_A/N , where N_A is the number of times event A has occurred in the succession. Thus, the probability that a future offset will occur between shears as a result of movement on the shear is N_A/N , where N_A is the number of splaying offsets observed between shears and N is the number of events occurring on the shears. Since no splays were observed between shears (*i.e.*, $N_A = 0$) in the time period t during which N events have occurred on the shear, the calculated probability is zero; however, as a conservative estimate the Licensee assumed $N_A = 1$ yielding a probability of $1/N$.⁵⁴

Two mechanisms were postulated as causes for offsets beneath the reactor. The first mechanism assumed that a future offset off the shears can be caused by motion on the shears. This may be envisioned as a splaying of the existing shear. The Separate Opinion states (Sep. Op. at 660) that "the relationship assumed by GE of $1/N$ to N/t , a simple inverse relationship, is based upon an assumption that the offsets on the shears were not accompanied by offsets between the known shears (*i.e.*, within the 1,320 foot zone between shears B-1/B-3 and B-2)." We disagree. As discussed above, in obtaining the term $1/N$ the Licensee has conservatively assumed that one splaying offset had occurred between the known shears despite the fact that none had been observed.

A second mechanism is assumed which may lead to future offsets occurring beneath the reactor. This mechanism postulates yet unknown-undiscovered shears to exist in the region. Clearly, the probability that these will give rise to offsets beneath the reactor may be estimated in the manner already described. Although the Licensee's analysis assumed a single undiscovered shear to occur within the 1,320 foot region between existing shears, conceivably more than one may exist. An estimate of this number can be made and a total probability calculated. It is apparent that any reasonable assumption as to the number of unknown-undiscovered shears that may exist in the region cannot greatly affect the probability estimate since t , the time period (128,000 years to 195,000 years) for which no events have occurred between the existing shears, is the dominant parameter in the calculation.

The probability of an offset surfacing beneath the reactor was determined by the analysis performed by GE to be approximately 10^{-6} per year. (Lic. Ex. 1 at 79)

Considerable discussion is devoted in the Separate Opinion to the manner in which the Staff compared observations at the GETR site with the 1971 San Fernando earthquake and other worldwide events. (Sep. Op. 667-73) Much of the criticism appears to us to be speculative and one is hard put to draw useful inferences from these speculations. We believe the Staff appropriately rejected the

⁵⁴ It is recognized that this simplistic argument has a more rigorous basis. See Lic. Ex. 14 for development of the term $P_{BS,ON}$.

worst case events and used characteristic or mean values for offsets in arriving at its recommended design criteria. The basis for this approach was the low probability of occurrence for the worst case. During the hearings, the Staff re-emphasized its belief that displacements larger than its recommended 1-meter design criteria may be exceeded at some place during a seismic event in the fault zone, but that the probability of a 1-meter offset beneath the reactor is very low (less than 10^{-4}). (Tr. 1394-95, 1403-8; Bd. Find. 47-54). Furthermore, the worldwide earthquake data set compiled by Dr. Slemmons relating fault length, magnitude and surface rupture suggest a likely maximum event of approximately 6.5 magnitude for the Verona which would in turn correlate with a displacement of 1 meter. (Tr. 1187)

The Staff assumed that the Verona will rupture to a length of 12 to 15 kilometers, despite the fact that worldwide data indicate that actual rupture can be substantially less than the total length of the fault. (Stf. Find. 45) It should be pointed out that the relationship between maximum surface displacement and length of fault rupture, as developed from the worldwide data set, is logarithmic and changes in rupture length would have to be large in order to significantly affect estimated surface displacements. Speculating upon the possibility of a fault rupture greater than the mapped length of the Verona, the Separate Opinion states that "we must recognize the possibility, however slight, that the Verona and Las Positas combined, of from 23 to 29 kilometers, might be the controlling length of fault for influencing the magnitude and, hence, the amount of surface displacement in a future event." (Sep. Op. at 675). We believe the evidence presented at the hearing supports the view that the Verona and Las Positas faults are not connected (Bd. Find. 18).

The Staff performed an independent probabilistic analysis using a different methodology. This analysis was conducted by the TERA Corporation. TERA calculated the likelihood of various size displacements occurring on the Verona fault from a knowledge of the slip rate. The slip rate was calculated using the topographic expression between the Vallecitos hills and the valley within which the GETR is located. As an independent check, the results of this calculation were compared to the information obtained from trenches dug on the GETR site (Tr. 1804). Dr. Slemmons, when asked if he considered the use of slip rate to determine the probability of earthquakes occurring to be a very reliable method, testified that he could not assess the reliability but believed that it is a valid method that has a sound basis and seems to fit empirically reasonably well with field observations (Tr. 1824-25). In response to a question of how much weight he would give to the probability analysis performed by TERA, Dr. Slemmons responded that he thought it is an important adjunct method that should be used in conjunction with deterministic geological methods, and that, while he would not use it as the prime method for establishing the risk at major vital structures, he believes it gives supporting data that has value (Tr. 1822). The Separate Opinion has misconstrued Dr. Slemmons' remarks on this matter (Sep. Op. at 664). Furthermore, he agreed

with the method used by the TERA Corporation for determining slip rates and believes their results are conservative (Tr. 1826-27).

The Separate Opinion criticizes the probability analysis as being highly dependent on uncertain geologic parameters and states that the USGS experts had reservations about the sufficiency of the geologic information on which the probabilistic analyses were based (Sep. Op. at 662). Dr. Brabb, the USGS expert, testified that he was not qualified to review the mathematical parts of the probabilistic analysis and, although in the beginning he had looked at the geologic parameters and felt that the figures being used were unrealistic, in later documents on probability analysis he felt that the figures were more realistic in terms of geologic parameters. He stated that he had not reviewed everyone (nor was he asked) to make certain that they conform to the geologic information (Tr. 1533). While the USGS experts were uneasy about the sufficiency of the geologic information available at the site, they made it abundantly clear that they were not deciding whether the data by itself was adequate, coupled with probabilistic studies, to assess surface offset nor were they asked to make calculations of the expected displacement underneath the reactor (Tr. 1562-63).

Probabilistic estimates were obtained for the occurrence of a surface offset beneath the GETR. It is significant that the estimates obtained from the models used by both Staff and Licensee agreed to within an order of magnitude and neither model yielded probability estimates with an upper bound greater than 10^{-4} even under the most conservative considerations. Sensitivity analyses gave further credence to the validity of the models used by illustrating that in order to achieve probability values greater than 10^{-5} per year, highly unrealistic values for geologic input parameters would have to be selected.

II. STRUCTURAL ANALYSIS

We turn now to criticisms of the structural analysis of the GETR facility as they are found in the Separate Opinion. The criticisms focus almost entirely on the analyses performed to demonstrate the ability of the concrete core structure to withstand the postulated design basis seismic event. This core structure consists of the biological shield surrounding the reactor pool and fuel storage canal together with radial walls extending from the foundation slab to the third floor of the containment building. The integrity of this structure, which supports other safety-related systems and components, must be maintained during the seismic event.

It is asserted that a major point has been obscured in the presentations of the Staff and Licensee, namely, "that the modified GETR has not been shown to be structurally capable of meeting the design basis parameters. Rather, although the surface offset design parameter has been set by the Staff and GE (and adopted by the majority) as 1 meter, the structural analysis has been found to be satisfactory

only with regard to a zero displacement underneath the foundation mat" (Sep. Op. at 684).

We believe the difficulty with the structural analysis expressed by this criticism stems from a misreading of the record. In the following discussion we highlight portions of the record which pertain to analysis of the core structure.

Detailed state-of-the-art investigations were undertaken by the Licensee to verify that the concrete core structure meets appropriate design criteria. These investigations were:

1. a structural analysis based on core structure materials
2. a structural analysis based on soil properties
3. a structural analysis based on probability considerations.

The design criteria are:

Criteria 1. The Regulatory Guide 1.60 spectra anchored to 0.75g as an effective vibratory ground motion at the site. This is set in motion on the Calaveras fault.

Analysis:

The reactor building concrete wall cracking capacities were determined using maximum allowable compressive stress values of 5400 psi, 3400 psi and 5000 psi for the ordinary concrete, magnetite concrete and ferrophosphorus concrete, respectively. These were the values obtained from compression tests of concrete core samples taken from the reactor building walls or at the time of construction. Analyses were performed to determine whether the concrete walls would withstand the effects of the above design criteria. In this analysis an effective peak ground acceleration value of 0.8g was used. (It was later determined that the results of this analysis represent a conservative bound for the effects expected at lower values of ground shaking and that reanalysis for a smaller acceleration of 0.75g, as specified in the criteria, was unnecessary.) Linear elastic, time-history dynamic analyses were performed using a lumped-mass cantilever model with foundation soil springs. Torsional effects were considered by including the eccentricity between the center-of-mass and shear center at each floor level. Shear forces and overturning moments were computed for all members and response spectra were generated for each floor elevation. Parametric studies were performed to investigate the influence on the response of the structure to variation in soil shear modulus and average area of contact between the base slab and the underlying soil. The effects of torsion and foundation embedment on the structural response were also investigated. Additional parametric studies were performed to investigate the influence of the variation in modal damping effects on the structural response.

The potential nonlinear effects were investigated by performing nonlinear analyses using appropriate analytical models. The objectives of the nonlinear analyses were to confirm the conservatism of the results of the linear elastic analyses.

Stress analyses were performed using a detailed finite element model consisting of three-dimensional elements. The analyses were based on a 0.8g effective peak horizontal ground acceleration and $\frac{2}{3}$ of this value for acceleration in the vertical direction. The ground response spectra was anchored to Regulatory Guide 1.60. The result of the analyses showed that the induced stresses in the portion of the concrete core structure which surrounds the pool and storage canal, and which also supports and protects the safety-related equipment and components necessary for safe shutdown, were much smaller than the cracking stresses. These stresses were determined from the forces obtained from the linear elastic dynamic analyses. The forces obtained from the nonlinear analyses were smaller than those obtained from the linear analyses. Furthermore, these analyses showed that, although some cracking of slabs may occur exterior to the safety-related portion of the structure, the ductility demand for these slabs will be low resulting in minor cracking. Find. 155-57, Lic. Ex. 25 at 2-1.

Based on the results of these analyses, we conclude that the concrete core structure meets design Criteria 1.

Criteria 2. A surface displacement of one (1) meter of reverse-oblique net slip along a fault plane which could vary in dip from 10 to 45 degrees and which could occur in a Verona fault zone strand (splay) beneath the GETR during a single earthquake.

Analysis:

An analysis of the reactor building for effects of a hypothetical surface rupture offset was performed using a finite element model of that portion of the reactor building which supports and protects the safety-related equipment and components necessary for safe shutdown. A one (1) meter surface rupture was assumed as the basis for the analysis. The surface rupture plane was considered to be at an angle of 15 degrees with the horizontal; however, the angle of rupture does not affect the results of the analysis.

Three principal cases were analyzed:

Case 1. The surface rupture was considered to intersect the reactor building on the near side.

For this case, the near-side basement walls would be heavily loaded and would crack. The horizontal thrusts associated with the wall pressures would be resisted by shear forces due to friction under the basement mat. The soil pressures on the far

side of the basement walls would not be significant and cracking of these walls would not occur.

Case 2. The surface rupture occurs on the far side of the reactor building.

In this instance, the horizontal soil pressures would be large and might cause the basement wall to deform on the far side. The horizontal force caused by the soil pressures on the exterior basement wall would be resisted by the shear forces mobilized by friction between supporting soil and the bottom of the foundation mat.

Case 3. The offset was assumed to occur near the center-of-gravity of the reactor building.

This case may create a cantilever effect since the far portion of the reactor building might be unsupported between the edge and the area where the soil makes contact with the foundation slab. The maximum stresses in the concrete core structure are produced for the cantilevered configuration. The length of the cantilever is dependent upon the soil bearing capacity beneath the reactor building. If the hypothetical surface rupture offset intersected the foundation mat between the far side of the reactor building and its center of gravity the result may be an uplift of the building. To verify that the concrete surrounding the pool and canal could resist a cantilever situation, an analysis of the core and radial wall concrete was conducted to verify that the weight of the cantilevered portion of the building could be resisted. All computed stresses for the cantilever load cases were well below cracking threshold capacity values.

If the offset intersects the foundation mat closer to the near side, the reactor building would tilt and be supported in a simple beam configuration. It has been shown that if the foundation mat were to span as a simple beam, the foundation mat and reactor building floor slabs would yield until the concrete core structure settles down to the supporting soil. Soil pressures on both sides of the basement wall would be large and cracking would probably occur.

The Licensee performed a detailed analysis of concrete cracking patterns which are expected to occur in the event of the postulated surface rupture offset. It was found that the reinforcement in the base slab would yield first at a loading equal to, or less than, one-tenth of the weight of the reactor building. A soil bearing capacity of 20 ksf was assumed in the analysis. Even if the ultimate capacity of the soil were increased, a higher value of soil bearing capacity would not change the results since the base slab has already yielded. The concrete cracking patterns were shown to occur in such a manner as not to affect the interior portion of the structure surrounding the pool and canal. Excessive deformation of the basement walls would not adversely affect the concrete core structure since these exterior walls are not essential to the integrity of the structural system which supports the pool and storage canal. Find. 158-164, Lic. Ex. 25 at 3-1.

Thus design Criteria 2 is satisfied since stresses induced in the concrete core structure, due to a hypothetical surface rupture of one (1) meter occurring beneath

the reactor building, will not cause cracking in this structure. We do not agree with the assertion that the concrete core structure has not been shown to be capable of withstanding a 1-meter surface offset.

Criteria 3. An effective vibratory ground motion of 0.6g, anchoring the Regulatory Guide 1.60 spectra, together with a fault displacement of one (1) meter was described in Criteria 2.

Analysis:

The Licensee performed several analyses for loadings on the reactor building which result from the combined effects of vibratory ground motion together with a surface rupture of one (1) meter occurring beneath the building. One approach used was to assume that the vibratory ground motion occurred subsequent to the surface rupture. In this analysis, an effective peak ground acceleration of 0.8g (higher than the 0.6g value of the design criteria) was used. Furthermore, it was assumed that the damage caused by the surface offset had occurred prior to the ground shaking and that only the undamaged structure would resist the vibratory ground motion. The effective peak ground acceleration value of 0.8g was anchored to Regulatory Guide 1.60 spectra.

Several conservatisms were introduced into this analysis. Although it was assumed that the rest of the structure, including all concrete slabs and walls exterior to the concrete core structure area had lost their structural resisting capacity, due to the surface offset effects, the total masses for the complete structure were used in the analysis model. Further assumptions were made to exclude the effects of building embedment in the analysis and to assume that the interior concrete structure rotates as a rigid block over a rigid base slab. These assumptions introduced additional conservatisms into the analysis.

It was found that the safety-related portion of the structure would be stable and that the forces and corresponding stresses induced by the post-offset vibratory motions would be below the threshold of concrete cracking.

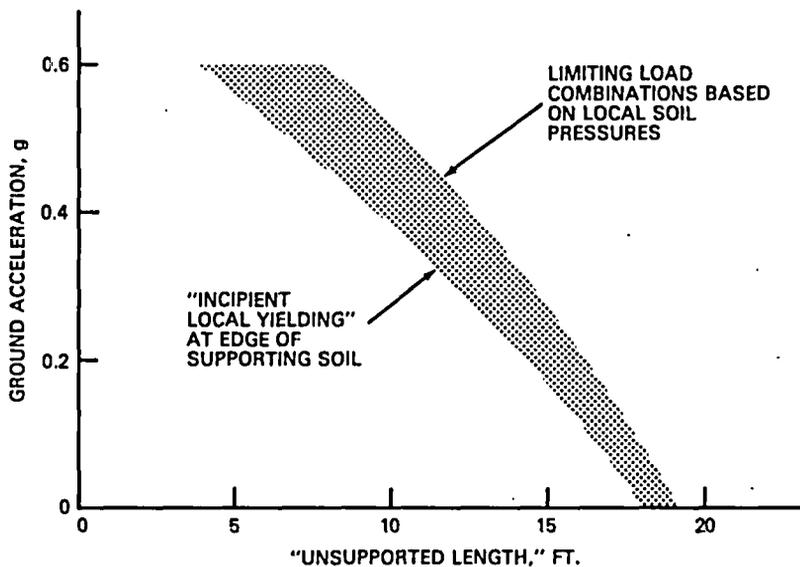
The Licensee performed additional studies to analyze the stability of the concrete core structure. Several questions have arisen regarding these studies.

As mentioned earlier (Case 3, p. 708), if the surface rupture intersects the foundation slab near the center-of-gravity of the reactor building, the building may exist in a cantilever configuration since the far portion of the building might be unsupported between the edge and the area where the soil makes contact with the foundation slab. A soil pressure analysis was performed to determine the physical load limits on the combined load case comprised of a ground acceleration and a surface rupture offset, the latter being represented analytically as the cantilever length. In these analyses, "incipient local yielding" of the soil was defined as the loading combination which produces bearing pressure at the edge of the supporting

soil equal to the ultimate bearing capacity (taken to be 20 ksf). Results were obtained for several cases of cantilever length and horizontal earthquake accelerations at which incipient yielding of the soil occurs. Additional analyses were performed to determine the combinations of ground acceleration and cantilever length at which complete local soil yielding will occur. Combinations higher than those obtained from this analysis would cause the structure to settle down and be either partially, or completely, supported by the soil — a condition easily tolerated by both soil and structure. These results are depicted in Figure 4. These soil pressure analyses, performed by the Licensee, demonstrated that there are physical limits on the soil bearing capacity when combined loading represented by ground vibratory motion and cantilever length of the reactor building are considered to occur co-seismically.

The Staff questioned the soil bearing capacity analysis performed by the Licensee. This questioning concerned the correctness of use of the value 20 ksf in the analysis for the ultimate bearing capacity of the subgrade soils beneath the reactor. This question arose because the undrained strength values, used by the Licensee, were the lowest tested soil strengths and because overburden soils, that would contribute to the bearing capacity, were not considered. A higher value of the bearing capacity would likely result in a larger unsupported cantilever length of the GETR foundation mat. The Licensee's witness testified that analyses were performed using a higher (30 ksf) value of the soil bearing capacity although this value is believed to greatly exceed those characteristic of the soils beneath GETR (Tr. 2295; Lic. Ex. 19 at 11).

To address the Staff's concern regarding the analysis, the Licensee performed an additional analysis of the subgrade rupture mechanism resulting from the postulated Verona fault event. This analysis consisted of a comparison of the static stability of two-dimensional soil wedges formed by thrust fault planes meeting the reactor foundation at different locations (Rankine Fault Model). The hypothetical thrust fault was visualized as a passive Rankine wedge being pushed by a major principal stress, P_p . For drained soil strength parameters $c' = 0$, and $\phi = 36^\circ$, the preferred failure surface (defined as the plane requiring a minimum value of P_p) is inclined at an angle $= 45^\circ - (\phi/2)$ when there is no surcharge. By trial and error the most probable failure plane corresponding to the minimum value of P_p was obtained by GE for the low water table (drained) case. The locations of the failure planes were varied for an assumed wedge depth of 70 feet below the reactor foundation slab. The results of the analyses by GE showed that, for the 21 feet of surcharge at the GETR, the preferred failure plane passes through the edge of the slab. Therefore, GE argued that a thrust fault plane will be deflected away from the base of the reactor slab because of the weight of the GETR and the surcharge. GE also performed calculations using assumed undrained strength parameters of $c' = 4000$ psf and $\phi = 0^\circ$ that would be appropriate for very rapid loading of a saturated subgrade for the high water table condition. In this case, GE also found that the



**FIGURE 4. Results of Soil Pressure Analyses
(Reproduced from Figure 4; Lic. Ex. No. 38)**

preferred failure planes (those requiring minimum passive pressure) did not fall beneath the reactor or within the zone that may create a cantilever span of the reactor mat.

A further detailed investigation of the subgrade rupture mechanism was undertaken to determine the sensitivity of the fault deflection analysis to various parameters related to soil conditions and fault location. In this investigation both undrained and drained soils were considered as well as the effects of faults which intersected the reactor foundation at different locations. It was determined that the Rankine Fault Model predicted, in each case, that the preferred planes surface on either the right or left side of the reactor foundation.

The Separate Opinion draws attention to the analysis reported in Lic. Ex. 19 regarding bearing capacity of the soil beneath GETR (Sep. Op. at 693). It highlights features of the analysis of fault behavior as "uncertainties . . . concerning the anticipated paths of the failure planes" (Sep. Op. at 695). This characterization may result from an incomplete reading (and comprehension) of the report. Portions of the report, which are omitted in the Separate Opinion, describe the idealized conditions assumed in the simple model used for the analysis. Those portions also provide an analytical approach for examination of the tendency for the fault to move either to the right or left.

The Staff reviewed the Licensee's fault deflection analysis and concurred with the findings that the previously hypothesized cantilever condition should not occur. As a check on the Licensee's work, the Staff performed additional calculations for an assumed wedge depth of 100 feet using similar soil conditions and determined that the findings were correct for the 21-foot surcharge load. The Staff noted that this result was dependent on the presence of the 21-foot high surcharge within about 170 feet of the reactor building. If, for any reason, a significant part of this surcharge were excavated a reevaluation would be necessary. The Staff also analyzed the three-dimensional aspects of the failure plane deflection around the GETR and found that the conclusion based on a two-dimensional analysis remains valid. Because of its concurrence with the fault deflection analysis performed by the Licensee, the Staff concluded the use of results of the soil pressure analysis, obtained by the Licensee, are *acceptable* for use in comparison with the inputs to the structural evaluations since they postulate a greater loading on the foundation mat than that predicted by the fault plane analysis. The use of these curves is acceptable to the Staff since it results in placing a conservative limit on the load combinations from the specified design basis event on the Verona fault. Stf. Ex. 1C.

Probabilistic analyses were performed to investigate the likelihood that the concrete core structure will withstand the seismic design event. The results are reported in Lic. Ex. 39. (See Sep. Op. Figure 2 for a graphical presentation of these results.)

Analyses were performed to assure that the facility can withstand the load combinations expected to occur. The capacity of the facility was determined based on evaluation of various sets of load combinations selected to conservatively represent the input parameters defined in Figure 4 and the probabilistic analyses. These included evaluations for the following combined input parameter cases.

- a. Ground acceleration = $0.75g$
 Unsupported length = 0 feet
- b. Ground acceleration = $0.0g$
 Unsupported length = 20 feet
- c. Ground acceleration = $0.30g$
 Unsupported length = 17 feet

Other selections for input parameters could have been made (for example, $0.6g$ vibratory motion and 20-foot unsupported length). We believe the selection of parameters that was made reasonably bound the limiting load combinations representing the hazard caused by the seismic design event. It was determined that the capacity of the concrete core structure would tolerate these load combinations, where capacity is defined as the point where concrete cracking is initiated.

Numerous conservatisms were introduced in the procedures used to evaluate the adequacy of the core structure. The effect of these conservatisms is cumulative and yields a total margin of safety greater than that determined by the analyses which were performed.

In summary, we find that all applicable loadings and effects of imposed deformations resulting from the design basis faulting and/or shaking were considered in a manner consistent with current practice and that the integrity of the concrete core structure will be maintained to permit it to carry out its intended function.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

John F. Wolf, Chairman
Linda W. Little
Forrest J. Remick

In the Matter of

Docket Nos. 50-237-SP
50-249-SP

COMMONWEALTH EDISON COMPANY
(Dresden Station, Units 2 and 3)

August 17, 1982

The Licensing Board's final initial decision authorizes the issuance of appropriate license amendments to permit replacement of the current spent fuel storage racks in each of the Dresden Units 2 and 3 spent fuel pools with 33 high-density storage racks. The conditions and commitments set forth in the partial initial decision (LBP-81-37, 14 NRC 708 (1981)) are carried forward with this decision. At present, reracking is the safest and least costly alternative for meeting requirements for spent fuel storage.

TECHNICAL ISSUES DISCUSSED

Alternatives to reracking; relevance of unresolved safety issues to the spent fuel pool modification; validity of mathematical analyses of loads imparted to pool floor during postulated rocking of racks during seismic events.

APPEARANCES

For the Applicants:

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For the Nuclear Regulatory Commission Staff:

Richard J. Goddard, and Charles A. Barth, Esquires

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FINAL INITIAL DECISION

I. INTRODUCTION

The Commonwealth Edison Company (Applicant) has applied to the Nuclear Regulatory Commission for permission to install new storage racks in the spent fuel pools (SFP's) at Dresden Nuclear Generating Station, Units 2 and 3. The proposed new storage racks in the spent fuel pools would increase the storage capacity from 1400 fuel assemblies for Dresden Unit 2 pool and from 1420 fuel

assemblies for Dresden Unit 3 pool to 3537 fuel assemblies for each pool or a total of 7074 storage spaces.

On May 11, 1978, the Applicant requested the issuance of license amendments. Notice of the proposed amendments was published in the *Federal Register* on August 11, 1978 (43 *Fed. Reg.* 35763), designating Atomic Safety and Licensing Board members as Dr. Forrest J. Remick, Dr. Linda W. Little and Edward Luton, Esq. Pursuant thereto, the State of Illinois, through the Attorney General of Illinois (Intervenor), filed a timely petition for leave to intervene in the proceedings. In a Notice of Hearing dated March 29, 1979, the Atomic Safety and Licensing Board granted the State of Illinois' petition to intervene.

On July 30, 1979, Edward Luton, Esq. withdrew as Chairman of the Atomic Safety and Licensing Board for this proceeding. He was replaced by John F. Wolf, Esq. (44 *Fed. Reg.* 45496).

A Prehearing Conference was held on August 19, 1980 at Chicago, Illinois for the purpose of determining whether Intervenor's contentions satisfied the requirements of the Nuclear Regulatory Commission's (NRC) Rules of Practice.

Subsequently, the Atomic Safety and Licensing Board (Board), by its Memorandum and Order dated September 9, 1980, admitted certain of Intervenor's contentions, it dismissed one on the ground that it lacked the necessary basis as required by 10 CFR §2.714(b), and it propounded a Board question to be addressed by the parties.

An evidentiary hearing was held in Morris, Illinois from November 19, 1980 through November 21, 1980. Evidence was presented by the parties about the contentions at issue and the Board question. An opportunity was afforded members of the public to make limited appearances. Only one person accepted the opportunity.

At the hearing session in Morris, Illinois on November 19, 1980 Applicant's Counsel informed the Board that Applicant had received information regarding bowing of the channels of the fuel assemblies; that the information was preliminary and that it was not in a position to state, at that time, whether or not the "bowing phenomenon" was a problem requiring that evidence regarding it be offered on the record. Subsequently, Applicant moved for a continuance of the evidentiary hearing to present evidence relating to bowing of the channels at a later time. Over the objection of the Intervenor, this Board granted the said motion.

The evidentiary hearing resumed in Chicago, Illinois on April 21 and 22, 1981. Applicant and the Nuclear Regulatory Commission Staff (Staff) presented evidence as to whether bowing of the fuel assembly channels might affect use of the proposed racks, as designed and fabricated, for storing channelled spent fuel assemblies, and whether the bowing phenomenon could have significant public health and safety implications.

Applicant filed a motion dated December 1, 1980, to strike portions of the cross-examination by Intervenor of Staff witness, Millard L. Wohl,¹ on the ground that the cross-examination had no relevance to Intervenor's Contention 6 or any other matter in controversy in this proceeding. Staff supported Applicant's motion in a response dated December 19, 1980. Intervenor still asserted that its Contention 6 required that systems interaction and multiple failure analysis should have been considered in the Safety Evaluation Report (SER). The Board granted the motion to strike. However, on consideration of the facts and arguments contained in Applicant's motion to strike and in the responses of Intervenor and Staff, the Board requested the parties to respond to an additional Board question (Board Question 2, *infra*) inquiring as to the relevance and the potential health and safety consequences of unresolved safety issues with respect to the proposed spent fuel pool modification.²

At the Board's request the parties responded to Board Question 2 by submitting affidavits. Affidavits were initially submitted by Applicant, Intervenor, and Staff.³ On March 13, 1981, in a conference call with all parties, the Board more specifically identified the "unresolved safety issues" with which it was concerned as being those issues reported to the Congress of the United States pursuant to Section 210 of the Energy Reorganization Act of 1974 and also reported in NUREG-0606, "Unresolved Safety Issues" Summary (the "Aqua Book"). The Board requested affidavits in response, and specifically requested that one affidavit be from a senior Staff member addressing the overall relevance and safety significance of the Unresolved Safety Issues. Subsequently, a second round of affidavits was received.⁴

Issuance of a decision was withheld pending receipt of answers to a Board Notification, dated May 20, 1981, raising questions regarding the effect, if any, of a seismic occurrence on the Dresden 2 and 3 spent fuel pools. The Staff subsequently requested the Board not to issue a final decision pending Staff's review of this issue.⁵ Further evidentiary hearings on the seismic issue were held in Bethesda, Maryland, September 11, 1981, and on July 20, 1982.

Because of a scheduled refueling outage and the shortage of spent fuel storage capacity, on September 24, 1981, the Board, in response to Applicant's motion,

¹ Tr. 674-84.

² Memorandum and Order, dated January 26, 1981.

³ For Applicant, affidavit of Robert F. Janeczek, with three attachments, dated January 30, 1981; for Staff, affidavit of Paul O'Connor, with attached documents, dated March 13, 1981; for Intervenor, "Intervenor's Determination of Generic Unresolved Safety Issues as Relevant to Spent Fuel Pool Modification," and affidavit of Richard B. Hubbard, dated March 17, 1981.

⁴ For Staff, affidavit of Karl Kniel, dated April 28, 1981; for Applicant, affidavits of Scott Pedigo and A. K. Sirgh, dated May 5, 1981; and for Intervenor, Richard B. Hubbard, dated May 7, 1981.

⁵ Letter dated June 29, 1981, to Board Members from Gus C. Lainas, Assistant Director for Safety Assessments, Division of Licensing, USNRC.

issued a partial initial decision modifying the operating license to permit installation of five high-density spent fuel storage racks and the withdrawal of thirteen of the original spent fuel racks at Dresden Unit 3. The Board found that the record supported approval of the 5-rack installation and issued a Partial Initial Decision (PID) on September 24, 1981.⁶

The Staff's SER was supplemented as directed in our PID (LBP-81-37, 14 NRC 759). The Supplementary SER (SSER)⁷ and the supporting testimony of Owen O. Rothberg and Gunnar Harstead⁸ are favorable to the installation of 33 high-density racks in each of the Dresden 2 and 3 pools. Based on the completed record before it, the Board finds that the SER, as supplemented by the SSER, indicates that the proposed license amendments are acceptable from a safety standpoint and therefore the modification using the 33 high-density fuel storage racks in each of the Dresden SFP's may be implemented.

II. FINDINGS OF FACT

A. Board Questions

Board Question No. 1 asks:

- A. What is the current status of the spent fuel unfilled storage capacity at Dresden Units 2 and 3?
- B. When will full core discharge no longer be possible?
- C. When will normal refueling discharge no longer be possible?
- D. What alternatives, if any, exist to shutting down the unit(s) when the spent fuel pool(s) is (are) filled to capacity?
- E. Which, if any, of these alternatives would require subsequent license amendments?

1. Applicant and Staff submitted testimony on Board Question No. 1.⁹ At present the Unit 2 spent fuel pool (SFP) has empty storage spaces for 508 fuel assemblies; the Unit 3 SFP, with the five high-density racks previously authorized, has spaces for 671 fuel assemblies.

2. Full core discharge capability (FCDC) is defined as sufficient unused storage capacity in the SFP to receive the total number of fuel assemblies from a reactor core. The reactor cores for Dresden Units 2 and 3 each consist of 724 fuel

⁶ LBP-81-37, 14 NRC 708 (1981).

⁷ Staff Ex. 5.

⁸ Testimony of Owen O. Rothberg and Gunnar A. Harstead regarding Commonwealth Edison's Proposal to Install 33 High Density Fuel Storage Racks (Rothberg and Harstead) following Tr. 1201.

⁹ Testimony of Terry A. Pickens (Pickens) following Tr. 94; testimony of Paul O'Connor (O'Connor) following Tr. 117; Tr. 1265-71.

assemblies. Considering each unit as an entity, Unit 3 lost FCDC in February 1980. Unit 2 lost FCDC at the time of the scheduled refueling outage in 1981.¹⁰

3. Refueling discharge capability (RDC) is defined as sufficient storage capability in the SFP to accept the number of fuel assemblies which must be discharged to accomplish a normal refueling of a reactor based on an 18 month operating cycle. Each Dresden Unit 2 or 3 reload consists of approximately 204 fuel assemblies. Considering each unit as an entity, with normal refueling operations each unit can undergo two additional refuelings before RDC is no longer possible.¹¹ Since FCDC has been lost for both units, the units must shut down no later than 1986. There is a possibility of shutdown before that time due to lack of space in the SFP to accommodate offload of a full core should discharge be necessary for repair or maintenance inside the reactor vessel.¹²

4. The data utilized to predict dates for loss of RDC were based on projected refueling outage schedules which did not include power coastdown; however, accounting for power coastdown would extend RDC only about four to five months beyond the dates presented in the prepared testimony.¹³

5. In response to Board Question 1D, the following alternatives were considered: shifting of spent fuel assemblies, transshipment to other nuclear stations, reprocessing, away from reactor (AFR) storage, on-site independent spent fuel storage installations, and physical expansion of existing spent fuel storage pools.

6. Utilizing the combined storage capacity of the Unit 2 and Unit 3 SFP's by shifting fuel assemblies between pools, the Applicant could maintain FCDC and RDC for one of the units for a longer period of time than if each unit and its SFP were considered separately. Using the combined capacity, FCDC for one unit will be lost in January 1983, and RDC for one unit will disappear in March 1985. Such use offers little improvement in the storage difficulties being encountered by the Applicant. Furthermore, reliance on the transfer of fuel assemblies between SFP's would unduly extend unscheduled outages, because shifting of the assemblies is a slow process. Also, the need for FCDC in one pool or the other could not be anticipated.¹⁴

7. The option of transshipment of spent fuel assemblies to other nuclear stations is not currently available to Applicant. The Applicant has nuclear generating stations located in Illinois at Dresden, Quad Cities, and Zion. The Applicant has filed an application with the NRC seeking permission to transship spent fuel assemblies between the Dresden and Quad Cities Stations. This application is

¹⁰ Pickens at pp. 3-4; O'Connor at p. 2.

¹¹ Tr. 1266.

¹² Pickens at pp. 4-5; O'Connor at p. 2.

¹³ Tr. 105, 181.

¹⁴ Pickens at p. 6; Tr. 123, 126-27.

currently the subject of another contested licensing proceeding in which the State of Illinois and others have intervened. Should the application be granted, Applicant estimates that FCDC and RDC could be extended for approximately one year. The Staff estimated that transshipment among all three locations could extend FCDC and RDC at Dresden 2 and 3 for three to four years; however, such three-way transshipment is hypothetical and is not based on any specific application.¹⁵

8. Transshipment of spent fuel assemblies from Dresden to Quad Cities would make more intensive use of, rather than increase, the existing spent fuel storage capacity available to Applicant. Authorization to transship fuel will only extend FCDC and RDC at Dresden Units 2 and 3 for approximately one year. Quad Cities nuclear station is projected to lose FCDC in March 1984 and RDC in September 1985. Any transshipments of spent fuel assemblies between Dresden and Quad Cities nuclear stations will use up spent fuel storage capacity at Quad Cities and thereby reduce the time that Quad Cities nuclear station will be available for operation.¹⁶ In essence, then, transshipment does not relieve the fuel storage capacity problem but simply transports the problem to another location.

9. Reprocessing of spent fuel assemblies is not an option currently available to the Applicant. At the present time, there are no commercial reprocessing plants in operation in the United States. In December 1977, with the NRC decision to terminate the generic study on plutonium recycle use in mixed oxide fuel (GESMO), commercial reprocessing of spent fuel in the United States was indefinitely deferred, making reprocessing an uncertain alternative in the instant proceeding.¹⁷

10. Storage of spent fuel at reprocessing plants is technically feasible; however, the Allied-General Nuclear Services' (AGNS) facility at Barnwell, S.C. has limited potential space. The availability of space at AGNS for either interim storage or long term storage without reprocessing is unclear.¹⁸

11. While the former Nuclear Fuel Services' (NFS) reprocessing plant at West Valley, N.Y. is currently licensed for spent fuel storage, NFS has announced its withdrawal from reprocessing activities and is no longer accepting spent fuel from utilities for extended storage.¹⁹

12. Away-from-reactor storage of spent fuel assemblies at other commercial facilities is another technically feasible but unavailable alternative. The only commercially licensed facility accepting spent fuel assemblies is the General Electric Facility at Morris, Illinois. Applicant has utilized all of its contracted storage space at this facility, and it is unlikely that additional permanent storage

¹⁵ Pickens at pp. 6-7; O'Connor at p. 5; Tr. 99-101, 106, 120-21, 172-73, and 182.

¹⁶ Pickens at p. 7; Tr. 107, 182.

¹⁷ Pickens at p. 7; O'Connor at p. 3; Tr. 118-19, 170.

¹⁸ O'Connor at p. 3; Pickens at p. 8; Tr. 170.

¹⁹ O'Connor at p. 3; Tr. 125.

space can be obtained. GE-Morris currently accepts for permanent storage fuel from utilities with which it has reprocessing agreements. Applicant is not a party to such an agreement.²⁰

13. Intervenor asked about the potential for interim AFR storage of spent fuel in the event that core discharge would be required for making repairs inside the reactor vessel. The Applicant's witness indicated that GE-Morris, adjacent to the Dresden Station, might be willing to accept spent fuel for brief periods, but that such transshipment would require shipping procedures which would cause lengthy time delays in reestablishing FCDC for Dresden Units 2 and 3. Transshipment would utilize a shipping cask capable of handling seven BWR fuel assemblies at a time and each shipment of fuel would take three to five days.²¹ No evidence was presented as to whether or not NFS or AGNS would accept fuel for interim storage.

14. At present there are no federally owned or operated AFR facilities, nor has Congress enacted any legislation authorizing federal AFR's and appropriating funds for this purpose. Any such federal facility would require preparation of an environmental impact statement and licensing by NRC prior to operation. Therefore, there is no assurance that storage at a federal AFR is a reasonable alternative to the requested SFP modification.²²

15. As an alternate to federal or commercial AFR storage, an Applicant-owned centrally located AFR facility could be constructed and operated to service Applicant's nuclear generating stations. It is estimated that the cost of storage in such a facility would be in excess of three times that for onsite compact storage; furthermore, the time required for its license and construction was estimated as more than six years. Construction of on-site ISFSI's at each of Applicant's nuclear stations would have similar cost and licensing disadvantages. While the NRC has reviewed and issued letters of approval for a standard design for an ISFSI, such approval does not constitute a commitment by the NRC to license such a facility.²³

16. Physical expansion of the existing Dresden Units 2 and 3 SFP's would be both expensive and difficult, requiring complex modification which might necessitate shutdown of the reactors during construction. The Dresden Units 2 and 3 SFP's are located above ground and adjacent to the reactor vessels. Further, there is limited space available for expansion. Physical alteration of the pools would also necessitate relocation of the stored spent fuel during the construction period. Finally, physical expansion would probably present an unreviewed safety question requiring NRC licensing approval.²⁴

²⁰ Pickens at p. 8; Tr. 127, 171, 174.

²¹ Tr. 96-99.

²² Pickens at p. 8; O'Connor at p. 4; Tr. 98.

²³ Pickens at pp. 8-9; O'Connor at p. 4; Tr. 119.

²⁴ Pickens at p. 9; Tr. 176.

17. Further enrichment of the uranium used in the Dresden Units 2 and 3 reactors is not an alternative to increasing the spent fuel storage capacity. The existing fuel cannot be subjected to additional burnup. The enrichment of the fuel currently in the reactors limits the extent of burnup. Once the reactivity margin built into the fuel is exhausted, the fuel cannot remain in the reactor and still have the reactor operate at its design rating. Also, NRC regulations limit the amount of fuel burnup that can be transported.²⁵ Finally, since both Units 2 and 3 have already lost FCDC, extended burnup programs with new fuel cannot alleviate the present problem, namely, the existing lack of FCDC.

18. In regard to Board Question 1(E), with one exception all the alternatives heretofore discussed would require issuance of licenses by the NRC, to the Applicant or to others. Applicant was granted authority for the one exception, shifting of spent fuel between the Dresden Units 2 and 3 SFP's, by NRC License Amendments 34 and 31 to Facility Operating License Numbers DPR-19 and DPR-25, dated January 30, 1978.²⁶

19. The Board has evaluated all of the alternatives presented in the record and finds that at the present time there is no reasonable alternative to the proposed reracking if shutdown of the Dresden Station is to be avoided. Further, there is no assurance that any of the alternatives can or will become available in the future in such a time frame that shutdown could be avoided. Board Question 2 states:

Based on a review and analysis of the various generic unresolved safety issues under continuing study, what relevance is there, if any, to the proposed spent fuel pool modification? Further, what is the potential health and safety implication of any relevant issues remaining unresolved?

20. The Board requested the parties to address Board Question 2 by affidavits (Part I, *supra*). Affidavits were submitted by all parties. On examination of these responses, the Board more specifically identified the "unresolved safety issues" with which it was concerned as being those issues reported to the Congress of the United States pursuant to Section 210 of the Energy Reorganization Act of 1974 and also reported in NUREG-0606, "Unresolved Safety Issues" Summary (the Aqua Book). An Unresolved Safety Issue "is a matter affecting a number of nuclear power plants that poses important questions concerning the adequacy of existing safety requirements for which a final resolution has not yet been developed and that involves conditions not likely to be acceptable over the lifetime of the plants affected." Generic problems which are candidates for the USI designation are categorized as A, B, C, or D in terms of their safety significance. USIs are usually Category A tasks, judged to be most important in terms of safety significances; Category B issues are less likely to qualify; and Category C and D issues

²⁵ Tr. 176, 178-80.

²⁶ Pickens at pp. 9-10; O'Connor at p. 6; Tr. 108.

are unlikely to qualify.²⁷ The Board specifically requested an affidavit from a senior staff member addressing the relevance and safety significance of the Unresolved Safety Issues.

21. Subsequently, the parties submitted another round of affidavits (Part I, *supra*), among them that of Karl Kniel, Chief, Generic Issues Branch, Division of Safety Technology, Office of Nuclear Reactor Regulation, USNRC. Kniel's affidavit identified twenty-one current Unresolved Safety Issues (USI), indicated that he had reviewed each of these and addressed their applicability individually to the Dresden SFP modification, and provided a short description of each.

22. Of the USIs only two, *i.e.*, A-36: Control of Heavy Loads Near Spent Fuel and A-40: Seismic Design Criteria, are relevant to the instant proceeding.

23. The Board finds that the responses provided by the parties satisfy the intent of Board Question No. 2.

24. Applicant's affidavit of R. Janecek (March 18, 1981) dealt with the additional unresolved safety issues raised by Intervenor. However, Staff's affidavits did not.

25. Following the evidentiary hearing and the submission of affidavits on Board Question 2 Intervenor moved the Board to order the Staff to address all unresolved generic safety issues including, but not limited to, all Category B tasks, items identified by the Advisory Committee on Reactor Safeguards, and relevant "Three Mile Island" issues. Intervenor asserted that its affidavits of Richard B. Hubbard set forth the nexus of these issues to the Dresden 2 and 3 SFP proceeding and further pointed to the River Bend decision [*Gulf States Utilities* (River Bend Station, Units 1 and 2), ALAB-444, 6 NRC 760 (1977)] as its basis that the Board was required to consider these and all unresolved generic safety issues in the context of this proceeding.

26. Although the Board did not request affidavits on other than Category A items, it nonetheless considered and evaluated the other unresolved safety issues set forth by Intervenor and addressed by Applicant. Based on that review, the Board identified no unresolved safety items except the two cited in paragraph 22 above as applicable to the instant proceeding. Consequently, the Board declined to compel the Staff to undertake further review of the additional unresolved safety issues.

27. Kniel's review of the 21 USI's identified most as not applicable in this proceeding: A-1 through A-12; A-17; A-24; A-26; A-31; A-39; A-42; A-45 through A-48.²⁸

28. The final resolution of A-36 was published in NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants," July 1980. Staff's Safety Evaluation of the

²⁷ NUREG-0510, "Identification of Unresolved Safety Issues Relating to Nuclear Power Plants," Report to Congress, January 1979.

²⁸ *Ibid.*, pp. 6-16.

proposed SFP modification, issued November 4, 1980, considered accidents involving heavy loads in the vicinity of the SFP and concluded "there is reasonable assurance that the health and safety of the public will not be endangered". In response to a request to all licensees from NRC, dated December 22, 1980, Applicant again reviewed this subject and intends to comply with schedules set by the Staff in Applicant's submittals of further information.²⁹

29. Resolution of A-40 has not been reached. The proposed racks and pool structures at Dresden 2 and 3 were evaluated for seismic loads in connection with the proposed SFP modifications.³⁰ As explained by Janecek, Applicant's analysis and the Staff's review thereof followed current Staff acceptance criteria. The fundamental input to both the analysis and review was the seismic design response spectrum which was approved by NRC for Dresden Units 2 and 3 at the operating license stage; it was not redone in connection with the instant proceeding. Consequently, it was determined that A-40, which *inter alia* addresses to what extent old plants meet current design criteria, was relevant in this proceeding.³¹

30. A reevaluation of the seismic design of Dresden Unit 2 (in essence, identical to Unit 3) was performed as part of the Systematic Evaluation Program (SEP) and published as NUREG/CR-0891. The SFP's were not specifically analyzed; however, the seismic review team generally concluded that structures and structural elements at Dresden are adequate to resist a safe shutdown earthquake (SSE) with a zero peak horizontal ground acceleration of 0.2g, which is probably slightly greater than the actual seismic hazard at the site.³²

31. As a result of the SEP Branch review of Topic IX-1 for Dresden 2, the Staff concluded that the seismic analysis of the new rack installation conducted by the Applicant did not adequately address several issues.

32. Applicant's responses to Staff's technical review questions on seismic issues were served in Staff's Board Notification of May 20, 1981. Applicant indicated that its responses to these questions were not relevant in the instant proceeding since the "fact that the NRC Staff in the exercise of its independent responsibilities, has seen fit to ask these questions does not make these into issues which must be litigated in this proceeding" and because of the late date the new questions had been raised in this proceeding.³³ Subsequently, all but one issue was resolved between the Staff and the Applicant, and the Applicant was permitted to install five new racks in the Dresden Unit 3 pool in order to support a scheduled refueling outage.³⁴

²⁹ Staff Ex. 1; Affidavit of R. F. Janecek, March 18, 1981; Kniel affidavit at p. 12.

³⁰ Applicant's Ex. 1 (Rev. 4) and Ex. 2 (Rev. 5).

³¹ Janecek affidavit at pp. 13-15.

³² Janecek affidavit at p. 14 and at Attachment B.

³³ Letter dated June 12, 1981, transmitting Applicant Exhibit 3.

³⁴ LBP-81-37, 14 NRC 708 (1981).

33. The single issue which remained unresolved was whether the SFP floors could withstand the loads, including impact, which would be imparted if all 33 racks rocked (tipped) during a seismic event and fell back simultaneously onto the SFP floor.³⁵

34. On October 2, 1981, the Applicant submitted to the Staff a report entitled "Evaluation of the Effects of Postulated Rocking Racks on Spent Fuel Pool Structures of Dresden Station Units 2 and 3." In that report the results of a non-linear time history analysis of the potential effects of a seismic event were presented. This analysis included the modeling of rack impact on the pool floor due to rocking or tipping.³⁶

35. The mathematical model of the rack/pool floor used in the analysis accounted for the non-linear effects of fuel bundle rattling within the cells and of the rack tipping on the pool floor. The results of the analysis indicated that the pool floor structure was well within its capacity under simultaneous loading from 33 racks. On December 14, 1981, the Applicant submitted additional responses to previous Staff questions which supported Applicant's choice of seismic loading and method of analysis. The Staff found that these presentations demonstrated suitable conservatism in the Applicant's analysis.

36. In addition, a non-linear analysis of the pool and rack system for Dresden Unit 2 was performed by a staff consultant. It was found that the SFP structure is conservatively capable of withstanding the postulated loads imposed by the full 33-rack installation.³⁷

37. A comparison also was made between the recent Quad Cities SFP expansion seismic analysis and the analysis used for Dresden 2. Both plants are Mark I boiling water reactors founded on rock in the same tectonic province. Although the Quad Cities plant is arranged somewhat differently than the Dresden plant, the SFP structures are identical in dimension and very similar in construction. The seismic event postulated for Quad Cities was a 0.24g maximum event based on the 1957 Golden Gate Park earthquake time history. The floor response spectra at the Quad Cities pool floor was developed from this event and used for construction of the plant.³⁸

38. The Staff considered that conclusions could be made regarding the adequacy of the proposed 33-rack Dresden installation by studying results of the analysis performed for Quad Cities. The Quad Cities Unit 2 pool structure was found to be conservatively capable of withstanding the loads imposed by 3970 fuel assemblies which will be arranged in 20 racks. The Dresden pools will each be capable of holding 3637 fuel assemblies arranged in 33 racks. The fact that the Quad Cities

³⁵ Rothberg and Harstead at p. 1.

³⁶ Applicant's Ex. 6.

³⁷ Staff Ex. 3.

³⁸ Rothberg and Harstead at 2; Staff Ex. 5, Enclosure at 2-3.

structures were found to be acceptable provides some additional assurance, in the form of another analysis, that the Dresden spent fuel pool structures are adequately constructed to withstand the loads which are postulated for their seismic event under a full 33-rack load.³⁹

39. The Board finds that the floors of Dresden Units 2 and 3 spent fuel pools are adequate to withstand the loads, including impact, which could be imparted if all 33 racks rocked or tipped during a seismic event and fell back simultaneously to the pool floor.

40. The Board finds that although USI A-40, Seismic Design Criteria remains unresolved, the proposed racks and pool structures were evaluated conservatively for seismic loads utilizing current staff acceptance criteria. Therefore, the Board finds that there is no health and safety implication of this issue remaining unresolved as related to the proposed spent fuel pool modifications.

B. Accident Analysis Addendum

41. Intervenor's Contention 6 asserted that the application for the SFP modifications inadequately addressed the increased consequences of accidents due to the increased number of spent fuel assemblies and additional amount of defective fuel to be stored in the spent fuel pool as a result of the modifications.

42. The Board found in its earlier PID relative to Contention 6 that the consequences of the accidents considered in the FSAR, SER and FES associated with the operating license review of Dresden Units 2 and 3 will not be increased as a result of issuance of the proposed license amendment permitting installation of five high-density storage racks in the Unit 3 SFP.⁴⁰

43. At that time, the Board indicated that resolution of whether the existing structures are adequate to withstand the additional loads of 33 racks during the SSE must await further analysis.⁴¹ The issue awaiting further analysis was whether the SFP floors could withstand the loads, including impact, which would result if all 33 racks rocked or tipped during a seismic event and fell back simultaneously onto the SFP floor.

44. As indicated above (Part I, *supra*) that issue has now been resolved in favor of proceeding with the installation of the 33 racks in each pool. Therefore, the Board amends ¶164 of its PID in that the Board finds that the consequences of the accidents considered in the FSAR, SER and FES associated with the operating license review of Dresden Units 2 and 3 will not be increased as a result of issuance of the proposed license amendment permitting installation of 33 high-density storage racks in the Units 2 and 3 SFP's.

³⁹ Rothberg and Harstead at 3; Staff Ex. 5, Enclosure at 3.

⁴⁰ LBP-81-37, 14 NRC 708 (1981), ¶164.

⁴¹ *Ibid.*, ¶163.

III. CONCLUSIONS OF LAW

1. At the present time there is no reasonable alternative to the proposed reracking of Dresden Units 2 and 3 spent fuel pools if shutdown of the Dresden Station is to be avoided. Further, there is no assurance that any of the alternatives can or will become available in the future in such a time frame that shutdown could be avoided.

2. Although the generic seismic design criteria issue (USI-40) remains unresolved, the proposed racks and pool structures for Dresden Units 2 and 3 were evaluated conservatively for seismic loads utilizing current staff acceptance criteria. There is no health and safety implication of this issue remaining unresolved as it relates to the proposed modification.

3. The issuance of the license amendment requested in this proceeding, installation of 33 high-density racks in the Dresden Units 2 and 3 spent fuel pools, is not a major Commission action significantly affecting the quality of the human environment and therefore it does not require the preparation of an environmental impact statement under the National Environmental Policy Act of 1969, 42 U.S.C. Section 4321, *et seq.*, and Part 51 of the Commission's regulations, 10 CFR Part 51.

4. There is reasonable assurance that the activities authorized by the requested operating license amendment can be conducted without endangering the health and safety of the public provided that the conditions set forth in the Order contained in the Partial Initial Decision are incorporated into the license, and provided that the commitments set forth in the Partial Initial Decision are followed.

5. The activities authorized by the requested operating license amendment will be subject to compliance with the Commission's regulations.

6. The issuance of the requested operating license amendment will not be inimicable to the common defense and security or to the health and safety of the public provided there is compliance with the conditions and commitments set forth in the order below.

IV. ORDER

In accordance with the Atomic Energy Act, as amended and the regulations of the Nuclear Regulatory Commission, and based on the findings and conclusions set forth herein it is

ORDERED

that the Director of Nuclear Reactor Regulation make appropriate findings in accordance with the Commission's regulations and issue the appropriate license amendment authorizing the installation of a total of 33 high-density storage racks in each of the Dresden Station Units 2 and 3 spent fuel pools.

It is further ORDERED in accordance with 10 CFR 2.760, 2.762, 2.764, 2.785 and 2.786, that this initial decision shall be effective immediately and shall constitute the final action of the Commission forty-five (45) days after the issuance thereof, subject to any review pursuant to the above-cited Rules of Practice.

Within ten (10) days after service of this initial decision any party may take an appeal to the Commission by filing of exceptions to this decision or designated parts thereof. A brief in support of the exceptions shall be filed within thirty (30) days thereafter [forty (40) days in the case of the Staff]. Within thirty (30) days of the filing and service of the brief [forty (40) days in the case of the Staff] any party may file a brief in support of, or in opposition to, the exceptions.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

**John F. Wolf, Chairman
ADMINISTRATIVE JUDGE**

**Forrest J. Remick
ADMINISTRATIVE JUDGE**

**Linda W. Little
ADMINISTRATIVE JUDGE**

**Dated at Bethesda, Maryland,
this 17th day of August 1982.**

APPENDIX

Exhibits

Staff's Exhibit No. and Title	Admitted
3. Dresden 2 & 3: Impact Effects on Spent Fuel Pool Slab, from Gunnar A. Harstead, dated May 19, 1982.	Tr. 1231
4. Regulatory Information Distribution System Accession No. 8112180367, "Subject: Forwards addl back-ground info on high density spent fuel racks . . .," dated December 14, 1981.	Tr. 1230
5. Supplementary Safety Evaluation Report for Dresden Nuclear Power Plant Units 2 and 3 Proposed Expansion of Spent Fuel Storage Facilities, transmitted May 26, 1982.	Tr. 1231
 Applicant's Exhibit No. and Title	
Admitted	
6. Letter from T. J. Rausch to Dennis M. Crutchfield, dated October 2, 1981, transmitting the report "Evaluation of the Effects of Postulated Rocking of Racks on Spent Fuel Pool Structures of Dresden Nuclear Station Units 2 and 3" by Quadrex Corporation.	Tr. 1250
7. Letter from T. J. Rausch to Dennis M. Crutchfield, dated January 20, 1982, summarizing Applicant's resolution of SEP concerns.	Tr. 1250
8. Resume of Krishna P. Singh.	Tr. 1250

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Sheldon J. Wolfe, Chairman
Dr. Walter H. Jordan
Dr. Harry Foreman

In the Matter of

Docket No. 50-382-OL

LOUISIANA POWER AND LIGHT COMPANY
(Waterford Steam Electric Station,
Unit 3)

August 17, 1982

The Licensing Board reopens the record in view of applicant's failure to submit as evidence an informational brochure, whose adequacy was in contention.

EMERGENCY PLANS: PUBLIC INFORMATION PROGRAM

The pre-emergency public information program (10 CFR §50.47(b)(7)) is neither minor nor insignificant. A proper program will avoid chaotic public response to an emergency and minimize risk to the public. *Southern California Edison Company, et al.* (San Onofre Nuclear Generating Station, Units 2 and 3), LBP-82-39, 15 NRC 1163, 1203 (1982).

EMERGENCY PLANS: PUBLIC INFORMATION PROGRAM

The form and content of informational brochures drafted to satisfy the pre-emergency public information requirement of NRC regulations (10 CFR §50.47(b)(7)) are not so clearly established by regulations that compliance therewith is a matter of course. *See, e.g., Cincinnati Gas & Electric Company, et al.* (Wm. H. Zimmer Nuclear Power Station, Unit 1), LBP-82-48, 15 NRC 1549, 1602 (1982); Consumers Power Company (Big Rock Point Plant), LBP-82-60, 16 NRC 540, 545-46 (1982).

RULES OF PRACTICE: BURDEN OF PROOF

The opinions of applicant's witnesses that an informational brochure, not submitted as evidence, would meet the Commission's emergency planning requirements are not an adequate substitute for Licensing Board examination of the actual brochure; such secondary sources, even when bolstered by the NRC Staff's and FEMA's assurance of a subsequent review, do not constitute "reasonable assurance" that the pre-emergency public information program will be properly implemented. See *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-580, 11 NRC 227, 228-31 (1980).

RULES OF PRACTICE: BURDEN OF PROOF

The term "reasonable assurance" requires more than a mere checklist comparison against regulatory criteria. *Southern California Edison Company, et al.* (San Onofre Nuclear Generating Station, Units 2 and 3), LBP-81-36, 14 NRC 691, 699 (1981). The term connotes the existence of a reasonable plan. *Public Service Company of New Hampshire, et al.* (Seabrook Station, Units 1 and 2), CLI-78-1, 7 NRC 1, 18 (1978). The reasonableness of a plan cannot be determined when the essential elements of that plan are indeterminate.

RULES OF PRACTICE: POST-HEARING RESOLUTION OF ISSUES

The adequacy of the pre-emergency public information program is a significant issue that calls for subjective evaluation; delegation of this determination would be improper.

MEMORANDUM AND ORDER* (Reopening The Record — Requesting Submissions)

MEMORANDUM

The Board has reviewed the record with respect to Joint Intervenors' Contention 17/26(1)(a). The record indicates that the pre-emergency public information

* In order to alert the parties and thereby enable them to timely file their submissions, during a conference call today, the Board read the contents of this Memorandum and Order to Representatives of the parties, including the Federal Emergency Management Agency.

program as applied to residents will consist of brochures to be distributed to the public. However, the brochure was not submitted as evidence at the hearing, nor had it been reviewed by either the NRC Staff or FEMA. Without more, this Board would have to proceed solely on the basis of Applicant's witnesses' description of the proposed brochure (*i.e.*, an iteration of the requirements of the regulations), and on the basis of the NRC Staff's and FEMA's assurance of a subsequent review.

We do not consider the pre-emergency public information program to be minor or insignificant. In *Southern California Edison Company, et al.* (San Onofre Nuclear Generating Station, Units 2 and 3), LPB-82-39, 15 NRC 1203 (1982), the Licensing Board noted, "In the absence of an adequate education program, the public response could be chaotic. . . . The premise is that a public education and information program, in place and functional before an emergency, will minimize the risk to the public in the event of an emergency." In addition, the form and content of informational brochures are not so clearly established by the regulations that compliance with the regulations is a matter of course. In *Cincinnati Gas & Electric Co., et al.* (Wm. H. Zimmer Nuclear Power Station, Unit 1), LBP-82-48, 15 NRC 1602 (1982), the Licensing Board noted that as a result of Intervenor's criticism, the informational brochure in that case had been redrafted to be readable to the average reader. The Board also found there to be informational deficiencies in the brochure (*Id.* at 1574, 1602). Similarly, in *Consumers Power Company* (Big Rock Point Plant), LBP-82-60, 16 NRC 540, 545-46 (1982), the Licensing Board found that an information pamphlet down-played the effects of an accident and might discourage evacuation. The Board also found part of the pamphlet was misleading (*Id.* at 548).

Do Applicant's promise of compliance and the NRC Staff's and FEMA's subsequent review constitute "reasonable assurance" that this part of the emergency plan will be properly implemented? We conclude that they do not. In the first place, upon such an important matter, we must see and evaluate the provisions of the brochure. *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-580, 11 NRC 227 (1980). Moreover, a "reasonable assurance" determination requires more than a mere checklist comparison against regulatory criteria. *Southern California Edison Company, et al.* (San Onofre Nuclear Generating Station, Units 2 and 3), LBP-81-36, 14 NRC 691, 699 (1981). The term "reasonable assurance" connotes the existence of a "reasonable plan." *Public Service Company of New Hampshire, et al.* (Seabrook Station, Units 1 and 2), CLI-78-1, 7 NRC 1, 18 (1978). The reasonableness of a plan cannot be determined when the essential elements of the plan are indeterminate.

We feel the resolution of the contention is not straightforward and simple. It is a significant issue that calls for subjective evaluation. We must read and evaluate the brochure — we cannot delegate that decision to others.

ORDER

In light of the foregoing discussion and pursuant to 10 CFR §2.718(j), it is this 17th day of August 1982

ORDERED

1. The record is reopened.
2. Applicant shall assign, as soon as possible, an exhibit number to the brochure, shall serve true copies on all parties and on the Board, and shall serve three additional true copies on the Board.
3. By September 1, 1982, the Staff and FEMA will review and file comments or reports with respect to the adequacy of Applicant's brochure.
4. By September 15, 1982, the Joint Intervenors shall submit their comments upon the adequacy of the brochure, inclusive of any recommended additions or modifications.
5. By September 24, 1982, Applicant shall file its comments replying to those filed by the other parties.
6. After receipt of the proposed exhibit and the comments or reports, the Board will determine whether the record has been reopened only to admit into evidence as exhibits the brochure and the comments or reports or, in addition, whether cross-examination will be necessary. In order to assist the Board, at the times (see paragraphs 3, 4, and 5 above) they submit their comments or reports, Staff, FEMA, the Applicant and the Joint Intervenors should recommend which procedure the Board should follow.

Judges Foreman and Jordan concur but were unavailable to sign the instant issuance.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Sheldon J. Wolfe, Chairman
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,
this 17th day of August, 1982.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Dr. Jerry R. Kline
Mr. Frederick J. Shon

In the Matter of

Docket Nos. 50-440-OL
50-441-OL

CLEVELAND ELECTRIC ILLUMINATING
COMPANY, *et al.*

(Perry Nuclear Power Plant, Units 1 & 2)

August 18, 1982

The Licensing Board resolves a motion to compel answers to interrogatories. Applicants are not required to respond to interrogatories concerning the ingestion pathway emergency planning zone, which is not relevant to the admitted contention about the evacuation EPZ. However, applicants are required to respond to all questions relevant to evacuation, including: (1) the use of resources on-site that might also be needed off-site, (2) the ability of responsible individuals promptly to recognize emergency conditions, (3) the assignment of administrative responsibility for maintaining the prompt alert and notification system, (4) meteorological and radiation release monitoring, and (5) the qualification and training of individuals responsible for communicating with off-site agencies about emergency conditions.

RULES OF PRACTICE: RESPONSE TO INTERROGATORIES

Applicants must provide a reasonably complete response to interrogatories. Their answers should not require the sifting of materials to obtain a complete answer but they may describe precisely the portions of documents that contain the requested information.

RULES OF PRACTICE: DISCOVERY; SCOPE OF INTERROGATORIES

Questions about applicant utility's financial qualifications for fulfilling its emergency planning responsibilities are beyond the scope of an operating license proceeding.

RULES OF PRACTICE: DISCOVERY; SCOPE OF INTERROGATORIES

Under a contention concerning the possible need for an automatic standby liquid control system, applicant must answer questions about the comparative advantages and disadvantages of that system compared to a manual standby liquid control system.

RULES OF PRACTICE: DISCOVERY; SCOPE OF INTERROGATORIES

Other interrogatories discussed by the Board concerned various aspects of emergency planning (NUREG-0654 criteria, initiating conditions, administrative responsibility, financial responsibility, meteorological monitoring, radiological monitoring, communications).

ORDER
(Concerning a Motion to Compel)

Oral argument about Sunflower Alliance Inc., *et al.*'s (Sunflower) June 21, 1982, Motion to Compel was held on August 13, 1982, in an on-the-record telephone conference. This decision resolves the Motion to Compel, discussing each specific contested request in the Sunflower motion. We do not address requests, such as a request for information when it is obtained, with which applicant has agreed to comply.

I. EMERGENCY EVACUATION ZONE AND INGESTION PATHWAY

A. Basis for Plume Exposure Pathway EPZ

Sunflower asked Cleveland Electric Illuminating Company, *et al.* (applicant) to show that the Emergency Planning Zone (EPZ) had been established:

with appropriate consideration of local emergency response capabilities as they are affected by demography, topography, land characteristics, and jurisdictional boundaries.

Sunflower's First Set of Interrogatories at question 1. Applicant responded by citing a portion of Perry Nuclear Power Plant's FSAR that was prepared by Alan N. Voorhees and Associates and was the basis for defining the EPZ.

Although Sunflower says the answer does not "demonstrate" what Sunflower had requested (Motion to Compel at 3), the question asked for the considerations actually affecting the establishment of the EPZ, and applicant has responded fully. We note, however, that applicant states that the EPZ may be modified. Answer to Motion to Compel (July 23, 1982) at 4. Should the modification occur, or should applicant develop new, relevant evidence, it would of course be under a continuing obligation to update its answer.

B. Ingestion Pathway EPZ

We find that the portion of Sunflower's question addressed to the rationale for establishing the ingestion pathway EPZ is not relevant to the admitted contention. That contention is limited to emergency planning for evacuation. It includes each specific factual allegation made by the intervenors when they submitted this contention; however, when we requested that the intervenors demonstrate that their factual allegations were addressed to the ingestion pathway (Tr. 667), they were unable to do so.

II. APPROPRIATE CRITERIA IN NUREG-0654

Sunflower asked applicant to show how it has met each of the evaluation criteria in NUREG-0654. Applicant has done so by citing Table F to its FSAR Appendix 13A. That table cites the page and section of the emergency plan that allegedly fulfill each NUREG-0654 criterion. A rule of reason is relevant, and applicant of that rule indicates that applicant's response is satisfactory. As the Appeal Board recently stated in *Commonwealth Edison Company* (Byron Nuclear Power Station, Units 1 and 2), ALAB-678, 15 NRC 1421, n.39 (1982).

Answers should be complete in themselves; the interrogating party should not need to sift through documents or other materials to obtain a complete answer. 4A *Moore's Federal Practice* ¶33.25(1) at 33-129-130 (2d ed. 1981). . . . Instead, a party must specify precisely which documents cited contain the desired information. *Martin v. Easton Publishing Co.*, 85 F.R.D. 312, 315 (E.D. Pa. 1980).

In this instance, we find that the document to which applicant refers in its answer specifies precisely the portions of the emergency plan addressed to each NUREG-0654 criterion and Sunflower has not explained how this is insufficient.

III. EMERGENCY RESPONSE AGREEMENTS AND USE OF VOLUNTEERS ON-SITE

Sunflower asked applicant to provide it with all agreements it has executed with emergency response organizations. Applicant's answer indicated the sections of the FSAR containing the agreements, but applicant refused to provide intervenors with letters of agreement for on-site assistance, which applicant considers irrelevant to the admitted contention.

We note that Sunflower's objection to applicant's answer is very general and does not provide a basis for compelling any further response. However, in the course of the August 13 telephone conference, the Ohio Citizens for Responsible Energy's (OCRE) representative argued that information about which resources are needed on the site would be relevant to assessing the possibility that the same resources are being used twice in the emergency plan. Accordingly, applicant must give Sunflower any agreements that have not been already provided and that relate to the possible use on-site of resources that also would be valuable off-site during an emergency. If all such agreements have already been provided, the applicant should state that there are no further agreements relating to the use of emergency equipment or personnel on-site.

For similar reasons, applicant should provide the information originally requested in interrogatory 7(c), relating to the use of volunteer personnel for on-site responsibilities.

IV. INITIATING CONDITIONS

Sunflower has requested information about conditions which might initiate an emergency response and about the ability of applicant's operating staff to promptly recognize such initiating conditions and declare the appropriate emergency. Applicant objects that the interrogatory deals with irrelevant on-site conditions.

In determining the merits of this controversy, we must be guided by a rule of reason. Sunflower originally questioned the workability of the evacuation plan, which still is not completed. We think it appropriate to give it broad latitude to inquire into the process by which an evacuation would be initiated. If that process is defective, the entire emergency evacuation plan will not work.

On the other hand, the workability of an emergency plan could lead to detailed questions about the sensitivity or workability of specific gauges within reactor systems. We do not believe such a broad scope of discovery would be appropriate or helpful.

There are two parts to Sunflower's inquiry. The first relates to applicant's reasons for confidence that the initiating conditions it is planning for provide an adequate spectrum of problems to assure that emergency plans will prove to be

satisfactory should an emergency occur. This is a legitimate subject of inquiry and the question must be answered.

The second part of Sunflower's inquiry relates to the ability of applicant's staff to recognize initiating conditions. It lists fuel damage indication, loss of off-site power, a tornado on-site, fires and instrument readings outside of the "manual range". However, it uses "etc." to indicate that these are only examples of the problem it is attempting to describe.

Given that the Commission's concern about emergency planning grew out of the TMI-2 incident, in which recognition of initiating conditions was difficult, this seems a relevant and important inquiry. Emergency plans are written for extremely rare events, so that industry experience with the ability of operators to diagnose events may not be an adequate basis for assuring the public that unexpected emergency conditions will be properly diagnosed when they occur. Applicant should therefore discuss what kinds of analysis, modeling, or simulation it has used, if any, to determine the ability of operators to validly diagnose emergency conditions, including unusual conditions or unusual control room indications. On the other hand, applicant need not address the location, legibility or sensitivity of individual measuring instruments. It may limit its response to what it knows about the capabilities of control room operators to discern whether conditions in the reactor call for the declaration of an emergency.

For similar reasons, interrogatory 9, covering applicant's procedures for classifying and declaring on-site and off-site emergencies is pertinent to the workability of the evacuation plan.

V. EXISTENCE OF FINANCIAL AND ADMINISTRATIVE MEANS

Applicant has objected to the portion of interrogatory 11 inquiring into the existence of financial and administrative means to assure the operability of the prompt alert and notification system throughout the lifetime of the Perry nuclear power plant. The objection to the inquiry on financial means is sustained because 10 CFR §2.740(b)(1) excludes all inquiries about applicant's financial standing from our hearing. However, applicant must describe the assignment of administrative responsibility within its organization in order to respond fully to the question about "administrative means".

VI. INGESTION PATHWAY EPZ

Applicant's objection to inquiries about the ingestion pathway EPZ in interrogatories 12, 18 and 34 are sustained. The ingestion pathway is not part of this contention. Although intervenors did raise questions concerning the adequacy of

means for protecting Canadian citizens (interrogatory 34), these questions were not raised within the framework of this contention or any other pending contention.

VII. METEOROLOGICAL MONITORING AND DOSE PROJECTIONS

Applicant's objection to providing information about meteorological instruments and procedures is overruled. Determining the direction of plume dispersal and advising the public about evacuation routes is an essential part of the evacuation plan.

For similar reasons, applicant also should respond to interrogatories 15 and 24. Means for measuring off-site doses and advising the public are related to public safety during an emergency and to the admitted contention on the workability of the evacuation plan. NUREG-0654 at 16, 26, 2-7.

VIII. COMMUNICATIONS TO OUTSIDE AGENCIES

Sunflower inquires in interrogatory 25 about the qualifications and training of control room employees with specific responsibilities for communicating with outside agencies and, indirectly, with the public in the event of an emergency. Since clear, consistent communication is an important part of applicant's responsibility for the workability of the plan, this information is relevant and should be answered with respect to each employee responsible for communicating with outside agencies or the public during an emergency.

Interrogatory 26 talks about an "emergency duty officer" but does not specify what off-site or communications responsibilities such an officer might have. Applicant should respond concerning its reasons for not hiring a special employee for the purpose of directing off-site communication in an emergency.

IX. TRAINING FOR PERSONS ARRIVING ON-SITE

Interrogatory 27 is disallowed because it inquires into the training of individuals who will respond to the Perry site in an emergency. Although it is relevant to the working of the off-site plan to know which resources will respond to the site, the training of individuals is not relevant to the success of the off-site plan.

X. EMERGENCY OPERATIONS FACILITY

Applicant's objection to interrogatory 36 apparently relates primarily to its breadth. Applicant points out that the Emergency Operations Facility is located

on-site. To respond adequately, applicant should answer fully the following questions: What communications, if any, concerning emergency evacuation will originate in the Emergency Operations Facility? What procedures, if any, will be used in the Emergency Operations Facility to collect relevant information about the condition of the Perry reactor and related information necessary to communicate to outside agencies fully and accurately about the risks attendant to a dangerous condition or accident?

XI. ATWS INTERROGATORIES

During the August 13 conference, the Board directed Sunflower to resubmit its ATWS interrogatories to address only the admitted contention by asking about the differential advantages and disadvantages associated with using a manual rather than an automatic standby liquid control system. Hence, we need not address the merits of this part of the motion to compel. (It would appear, however, that the amended question 72, relating to "boron" rather than "foam", is relevant to the evaluation of the importance of applicant's allegation that there is a greater risk that an automatic SLCS will introduce boron into the reactor rather than a manual system. Consequently, absent some objection not yet made known to the Board, applicant should endeavor to answer this interrogatory.)

XII. ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 18th day of August 1982

ORDERED:

(1) Cleveland Electric Illuminating Company shall promptly comply with the Board's rulings and interpretations, contained in the accompanying memorandum.

(2) The parties shall promptly confer concerning any ambiguities which may exist in this order and, if unable to resolve those ambiguities, shall promptly request a conference in which the presiding officer may resolve those ambiguities.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE**

Bethesda, Maryland

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

John H Frye, III, Chairman
Dr. M. Stanley Livingston
Dr. Frank F. Hooper

In the Matter of

Docket No. 50-358-OL

THE CINCINNATI GAS & ELECTRIC
COMPANY, *et al.*
(Wm. H. Zimmer Nuclear Power
Station, Unit 1)

August 24, 1982

Acting on Applicants' Motion for Reconsideration and Clarification of the June 21 Initial Decision, LBP-82-48, 15 NRC 1549 (1982), the Licensing Board: (1) authorizes the issuance of a license permitting fuel loading, low power testing, and operation not in excess of 5% of rated power subject to the condition that the authorization will be revoked should the Commission, on reconsideration, reverse its order in CLI-82-20, 16 NRC 109 (1982), which required the dismissal of eight safety-related contentions; and (2) denied Applicants' relief from further proceedings ordered in the Initial Decision with respect to emergency evacuation of schools and submission of FEMA findings.

OPERATING LICENSE PROCEDURES: LOW POWER LICENSES

Where a licensing board finds that all matters in contention, other than those relating to NRC and FEMA review of offsite emergency preparedness, have been resolved either favorably to applicant or through the issuance of appropriate license conditions, it may, pursuant to 10 CFR §50.47, as amended (47 *Fed. Reg.* 30232 [July 13, 1982]), authorize the Director of Nuclear Reactor Regulation to issue a license authorizing fuel loading and low power operations not in excess of

5% of rated power. Authorization of the issuance of such a license by the Director, upon his making all requisite findings, may be made even in the absence of a motion by the applicant pursuant to 10 CFR §50.57(c) for a low power license.

OPERATING LICENSES: EMERGENCY PLANNING; FINDINGS

Pursuant to 10 CFR §50.47(a)(1), the NRC must find, prior to the issuance of a license for the full power operation of a nuclear reactor, that the state of onsite and offsite emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. In accordance with 10 CFR §50.47(a)(2) the Commission is to base its finding on a review of the Federal Emergency Management Agency's (FEMA's) "findings and determinations as to whether state and local emergency plans are adequate and capable of being implemented," and on a review of the NRC Staff assessment of applicant's onsite emergency plans.

EMERGENCY PLANNING: FEMA FINDINGS; REBUTTABLE PRESUMPTION

Pursuant to 10 CFR §50.47(a)(2), a FEMA finding as to the status of offsite emergency planning preparedness will constitute a rebuttable presumption on the question of the adequacy of such plans. Based upon existing precedent, it is unclear whether this presumption attaches only to FEMA's final formal findings on the state of offsite emergency preparedness, or whether such a presumption may be accorded to preliminary or interim FEMA findings.

EMERGENCY PLANNING: FEMA FINDINGS; REBUTTABLE PRESUMPTION

As a rebuttable presumption dissolves in the face of reliable and probative evidence to the contrary, the practical effect of any rebuttable presumption created by 10 CFR §50.47(a)(2) would be of little moment with regards to contested aspects of FEMA's findings, leaving a licensing board free to weigh the testimony of each party on its own merits. *See Metropolitan Edison Company* (Three Mile Island Nuclear Station, Unit No. 1), LBP-81-59, 14 NRC 1211, 1465 (1981).

EMERGENCY PLANNING: FEMA FINDINGS; INTERIM FINDINGS

A licensing board must base its findings on the status of offsite emergency preparedness, pursuant to 10 CFR §50.47(a)(2), on FEMA's testimony as to its

review of those portions of the state and local plans related to the contentions, as viewed in light of other testimony adduced at hearing. While a licensing board may rely on testimony based on FEMA's interim findings in making its own findings, it need not be satisfied with testimony so preliminary and conclusory as to fail to meet the same standards expected of other testimony in Commission proceedings. To do so would deprive both the board and parties of any meaningful opportunity to cross-examine FEMA witnesses as to the bases for the Government's conclusions.

LICENSING BOARDS: DELEGATION OF AUTHORITY

A licensing board may not delegate to the NRC Staff, or to FEMA, its obligation to resolve issues placed into controversy in an operating license proceeding, however conscientiously they may pursue their work. *See Cleveland Electric Illuminating Company, et al.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-298, 2 NRC 730, 736-737 (1975); *Public Service Company of Indiana, Inc.* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-461, 7 NRC 313, 318 (1978); *Metropolitan Edison Company* (Three Mile Island Nuclear Station, Unit No. 1), LBP-81-59; 14 NRC 1211, 1419 (1981). To do so would be a clear violation of section 189 of the Atomic Energy Act of 1954, as amended, as it would render the hearing process a nullity.

EMERGENCY PLANNING: REOPENING RECORD ONCE FINAL FEMA FINDINGS FILED

Where FEMA testimony based upon its interim findings as to the state of offsite emergency planning is so preliminary and conclusory as to fail to permit meaningful cross-examination of Government witnesses as to the bases for their conclusions, it is appropriate for a board to permit reopening of the record on offsite emergency planning matters upon a lesser showing of good cause than that which is ordinarily required to reopen a record. Such a showing shall be based upon particular parts of the final FEMA findings and the Staff's final supplement to its Safety Evaluation Report which relate to admitted contentions, and shall demonstrate that an opportunity for cross-examination, as distinguished, for example, from an opportunity for further written comment, is required for a full and true disclosure of the facts.

RULES OF PRACTICE: MOTION FOR RECONSIDERATION

A motion for reconsideration must state specifically the respects in which an initial decision is erroneous. *See* 10 CFR §2.771. It will not suffice to allege that a

decision has had an unintended effect, without specifying how the board is supposed to have erred in reaching its findings. If reasons now exist justifying a different result, they must be presented on the record, not in the form of an unsworn memorandum of law from counsel, which is not evidence.

MEMORANDUM AND ORDER

(Ruling on Applicants' Motion for Reconsideration and Clarification of the Licensing Board's Initial Decision Dated June 21, 1982)

Applicants have moved for reconsideration and clarification of this Board's June 21 Initial Decision, LBP-82-48, 15 NRC 1549 (1982). Both Staff and ZAC have responded.

The first point raised by Applicants concerns a perceived ambiguity in the Initial Decision. Applicants believe that the decision is unclear regarding the circumstances under which fuel loading and low power operation (at not more than 5% of rated power) can be undertaken. Staff supports Applicants' request for clarification of this point, while ZAC finds the decision "quite clear."

In order to eliminate any confusion, we wish to point out that in the first paragraph under the heading "Relief" on p. 1577 of the Initial Decision (LBP-82-48), we indicated that the deficiencies in offsite emergency planning needed to be corrected ". . . prior to operation of the station at power levels in excess of 5% of rated power." This applies to all deficiencies, and, to the extent there is a conflict, overrides any other language to the contrary, including the language concerning the filing of the final FEMA findings and the Staff's SER evaluating them. In short, as we indicated in the Initial Decision, ". . . the deficiencies identified in [the] record are not significant in the context of low power operation at levels not in excess of 5% of rated power" (LBP-82-48, 15 NRC 1577 (1982)).¹

Applicants also request that the decision should be clarified to specifically authorize the issuance of such a license by Staff. Staff, citing the fact that no such license had been requested pursuant to 10 CFR §50.57(c) and the pendency (at that time) of eight safety-related contentions admitted as Board questions, opposed this request. ZAC raises no objection.

Staff correctly states the reasons why no such authorization was incorporated in the Initial Decision. It would indeed have been inappropriate to have issued such an authorization in light of the pendency of the eight safety-related issues, which, subsequent to the Initial Decision, were admitted as Board issues. (LBP-82-54, 16

¹ Following issuance of the Initial Decision, the Commission amended its rules to make it clear that fuel loading and low-power operation (up to 5% of rated power) could be undertaken prior to NRC and FEMA review of offsite emergency preparedness. 47 Fed. Reg. 30232, July 13, 1982.

NRC 210.) So long as those issues were pending, the appropriate means of raising the question of low-power operation was a motion pursuant to 10 CFR §50.57(c).

However, those issues are no longer pending. On July 30, 1982, the Commission reversed this Board's action admitting the eight contentions (CLI-82-20, 16 NRC 109), and on August 2, this Board in an unpublished Memorandum and Order carried out the Commission's instructions to dismiss these contentions. Consequently, we perceive no bar to now authorizing the Director of Nuclear Reactor Regulation, upon making the findings prerequisite thereto, to issue a license authorizing fuel loading and low-power operations not in excess of 5% of rated power.

This authorization is, however, subject to one condition. We note that Miami Valley Power Project (MVPP), the sponsor of the eight contentions, on August 6 sought reconsideration of the Commission's order. In the event the Commission reconsiders and reverses its earlier ruling, this authorization is revoked.

Next. Applicants seek deletion of the requirement which we imposed with respect to the final FEMA findings.

Staff states:

. . . it is not appropriate to have the parties review those contentions upon which the Licensing Board has made its final adjudication in the absence of a properly filed motion for reconsideration or a motion to reopen the record. However, as to those matters which the Board has specifically identified [that] are to be the subject of further proceedings (school evacuation), it would be appropriate for FEMA to submit additional interim findings directed to the substance of the matters remaining in controversy and for all the other parties to review those interim findings and provide comments by way of testimony. (Staff Response, p. 6)

ZAC's principal position seems to be that the Commission's regulations require that the final FEMA findings be presented on the record before the Board may authorize full-power operation.

At the outset, we wish to make it clear that our ruling with respect to the FEMA findings was intended to apply only to the facts of this case. It was based in part upon Applicants' commitment quoted on page 1580 of the Initial Decision (LBP-82-48), in part upon the nature of FEMA's presentation on the contested issues, and in part upon the fact that the hearing proceeded on the basis of interim emergency plans which were subject to revision and FEMA approval after the close of the record.

Pursuant to 10 CFR §50.47(a)(1), the NRC must find, prior to the issuance of a license for the full-power operation of a nuclear power reactor, that the state of onsite and offsite emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. In accordance with section 50.47(a)(2), the Commission is to base its finding on a review of FEMA's "findings and determinations as to whether State

and local emergency plans are adequate and capable of being implemented," and on a review of the NRC Staff assessment of Applicant's onsite emergency plans. Furthermore, "In any NRC licensing proceeding, a FEMA finding will constitute a rebuttable presumption on a question of adequacy."

During the course of this proceeding, however, we were informed by Counsel for the Staff that FEMA's testimony would be based on that agency's preliminary examination of offsite planning efforts, not the final formal FEMA findings which the Staff believed to be the subject of section 50.47(a)(2). The Staff's position in this case, therefore, was that FEMA's testimony was not entitled to the rebuttable presumption prescribed by that section (Tr. 4748).² Be that as it may, this Board is still charged with the obligation, pursuant to section 50.47(a)(2), to base our conclusions regarding the adequacy of offsite emergency preparedness as to those matters in controversy upon FEMA's review of the adequacy of state and local emergency preparedness, as presented to us through FEMA's testimony.

At the urging of Applicants and Staff, and in accord with the practice followed in other licensing cases, we proceeded to hearing on the basis of interim state and local emergency plans. Although FEMA's review of these plans was far from complete, FEMA attempted to address, in its testimony, the substance of the contentions which were based on the interim plans. Its witnesses lacked the knowledge to do so.

FEMA proceeded to hearing in this case at probably the earliest moment which it considered possible. We note that on October 29, 1981, at our prehearing conference related to emergency planning matters, Staff Counsel informed us that FEMA would be able to proceed to hearing on February 1, 1982 (Tr. 4751); Staff stated that it had "backtracked" this date from Applicants' then-proposed July, 1982, fuel-loading date and had calculated that it would provide sufficient time for this Board to issue its initial decision before that date, *provided* that we used our authority to require that the parties submit their findings simultaneously (Tr. 4751-4752). Staff Counsel further stated, in response to Applicants' counsel's suggestion that our hearings commence in mid-December, 1981, that FEMA was responsible for establishing its own schedule and that no FEMA testimony and no

² The Board and parties proceeded on this interpretation of the Commission's regulations, so that it could properly be described as the law of the case.

The Board is aware that the Government has taken a contrary position in at least one other proceeding as to whether an interim FEMA finding is entitled to the rebuttable presumption spoken of in section 50.47. However, we note that FEMA's review in that case was considerably more complete than it is in this proceeding. See *Southern California Edison Company, et al.* (San Onofre Nuclear Generating Station, Units 2 and 3) LBP-82-39, 15 NRC 1212, n.33 (1982). We need not resolve this matter for our present purposes, however, as our evaluation of FEMA's testimony would be identical, whether or not such a presumption attaches. Furthermore, as another licensing board has noted in a somewhat similar context, a rebuttable presumption dissolves in the face of reliable and probative evidence to the contrary. This means that the practical effect of any rebuttable presumption created by section 50.47 would be of little moment with regards to contested aspects of FEMA's findings, *Metropolitan Edison Company* (Three Mile Island Nuclear Station, Unit No. 1), LBP-81-59, 14 NRC 1211, 1465 (1981), and we would thus be left to weigh the testimony of each party on its own merits.

assessment by the Federal Government of the adequacy of the plans would be prepared at that time. (Tr. 4755-4756). Eventually, however, arrangements were made for the evidentiary phase of our proceeding to commence in late January, 1982. Very shortly after the completion of our hearings, Applicants postponed their proposed fuel-loading date to December of this year.

Obviously, FEMA proceeded to hearing in this matter prematurely. While it is possible that they did so to accommodate Applicants' then-proposed fuel-loading date, this does not justify FEMA's inability to respond to Intervenor's contentions.

FEMA should not have agreed to proceed to hearing until such time as its witnesses were able to demonstrate that there existed some reasonable bases for their conclusion that these plans are adequate and capable of implementation. The absence of any bases for the FEMA witnesses' opinions led this Board to discount FEMA's testimony in its Initial Decision and for us to conclude that we would not issue an operating license until its final findings related to the contentions had been filed and reviewed.

Had FEMA effectively dealt with the contentions by providing a reasonable basis on which to conclude that they were unfounded, we could have let the matter rest, with little likelihood that it might become necessary to reopen the record to take up significant new matters. In those circumstances, we would have had reliable and probative evidence of the Government's answer to the problems raised by the contentions. Had only portions of the FEMA response been inadequate, the matter, appropriately limited to specific facts, could have been addressed through license conditions or further proceedings. In short, this Board would have had before it an adequate record upon which it could judge the Government's reaction to the contentions.

Such was not the case in this proceeding. As we read section 50.47(a)(2), we must base our finding as to the adequacy of those portions of the State and local plans related to the contentions on FEMA's testimony as to its review of those plans, viewed in light of other testimony which was adduced at hearing. Agreeing to accept preliminary FEMA findings, however, does not mean that this Board must be satisfied with testimony which is so preliminary and conclusory as to fail to meet the standards which the Commission expects of other testimony. To do so would deprive both the other parties and this Board of any opportunity to cross-examine FEMA witnesses as to the bases for the Government's conclusions.

While we are certain that FEMA, Staff, Applicants, and their respective counsel have no such intention, to permit this matter to be closed without the filing of the final FEMA findings and Staff review related to the contentions would allow the Government to ignore the results reached in the hearing process. Those results were in large part based on the testimony of the state and local planners. It was well understood when that testimony was given that the work product of those planners was subject to review and approval by FEMA. FEMA thus has the authority to change the factual underpinning of the Initial Decision. But there is nothing in the

record to indicate how FEMA might (or might not) do so. The FEMA witnesses addressing the specific contentions simply had insufficient knowledge.

This situation is clearly contrary to the requirements of §189 of the Atomic Energy Act that a hearing be held on issues placed into controversy in an operating license proceeding. We cannot delegate to the Staff, or to FEMA, our obligation to decide such issues, however conscientiously they may pursue their work. See *Cleveland Electric Illuminating Company, et al.* (Perry Nuclear Power Plant, Units 1 and 2), ALAB-298, 2 NRC 730, 736-737 (1975); *Public Service Company of Indiana, Inc.* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-461, 7 NRC 313, 318 (1978); *Metropolitan Edison Company* (Three Mile Island Nuclear Station, Unit No. 1), LBP-81-59, 14 NRC 1211, 1419 (1981). Leaving the Government free to follow whatever course it pleases regardless of the outcome of the hearing renders that hearing a nullity. Therefore it cannot be tolerated.

What we require does not differ greatly from what the Applicants voluntarily agreed to before and during the hearing. As we have indicated, we are concerned that the FEMA review of the interim plans could result in significant new developments impinging on the contentions and our findings. We have no basis in the present record on which to reach an informed conclusion with regard to the FEMA review. Consequently we require that the results of the FEMA review be served on the Board and the parties so that, in the words of Applicants' counsel, ". . . Mr. Dennison and his clients and Mrs. Webb and her client would be given the opportunity to make appropriate motions with regard to the resumption of these hearings as these significant changes might affect their contentions in this proceeding." (Tr. 7050-51.)

The only difference we perceive between what we are requiring and what Applicants agreed to is the burden which would have to be met to successfully make an "appropriate motion." Applicants believe that a successful motion should meet the standards for reopening records. In the circumstances of this case, we view that standard as entirely too stringent. Given some basis upon which to reach an informed conclusion concerning the FEMA review, that standard might be worthy of consideration. Lacking such a basis, it clearly cannot be imposed. Nor do we believe that the standard we adopt differs greatly from that adopted by other boards. We note, for example, that in closing the record on emergency planning subject to the submission of three future documents, a board noted that on receipt of one of the documents, FEMA findings, a party might seek to reopen the record on a showing of good cause. "Such a showing," that board stated, "shall be based upon particular parts of the FEMA findings and demonstrate that an opportunity for cross-examination (as distinguished, for example, from an opportunity for further written comment) is required for a full and true disclosure of the facts." *Southern California Edison Company, et al.* (San Onofre Nuclear Generating Station, Units 2 and 3) unpublished order of October 6, 1981.

In short, there must be some basis upon which the Board may reach an informed conclusion with respect to the Government's position on the offsite emergency preparedness aspects of this application. In this case, that basis does not exist. We know of no other way in which to acquire that basis than to require that the final FEMA findings related to the admitted contentions, and the Staff's supplement to its Safety Evaluation Report, a document which the Staff must issue to comply with 10 CFR §50.47(a) prior to issuing an operating license, be filed herein and served on the parties. The parties shall have a reasonable opportunity to assess the impact of these documents on the admitted contentions and the Initial Decision.

We wish to emphasize again that our holding is limited to the facts of this case which, we believe, are significantly different from other emergency planning proceedings. These differences are the nature of the FEMA presentation and the detailed, sharply focused nature of the contentions. We have no reason to believe that the FEMA presentations in other cases are such that there, as here, they leave the Government room to ignore the results of the hearing process contrary to §189 of the Atomic Energy Act.

Finally, Applicants wish ". . . the Board to reconsider its findings related to alleged inadequacies in school communications and, as a license condition, to require the completed school procedures to be submitted to the NRC Staff." (Motion, p. 14.) Applicants argue that their position is consistent with the results of other licensing proceedings, that the local officials had already approved certain plans covering evacuation of the Clermont and Campbell County schools, and that the Staff had requested FEMA to carry out a field verification of procedures and communications so approved.

Staff appears to agree with Applicants but suggests the presentation of further evidence in light of the fact that the record has been reopened. Because Staff replied to the Applicants' Motion prior to the issuance of CLI-82-20, we do not know its present position. ZAC opposes Applicants' Motion.

While Applicants may well be correct with respect to the disposition of other licensing cases, this record speaks for itself. Applicants have advanced no reason which would justify a departure from the findings made in the Initial Decision, and consequently no reason to alter the relief there awarded. *See* 10 CFR §2.771; *see also Frito-Lay of Puerto Rico, Inc. v. Canas*, 92 F.R.D. 384 (D.P.R. 1981). Applicants do not assert that the Board erred in making those findings, only that the findings have had an unintended result. If reasons now exist justifying a different result, they must be presented on the record, not in the form of an unsworn memorandum of law from Applicant's counsel which is not evidence. *See Frito-Lay, supra; Lacey v. Lumber Mutual Fire Insurance Co.*, 554 F.2d 1204 (1st Cir. 1977). Consequently we deny Applicants' Motion in this respect, and await the advice of the parties as to when they wish to proceed. In this connection, the Board is most anxious to hear FEMA's conclusions based on their field verification.

In consideration of the foregoing, it is this 24th day of August, 1982,
ORDERED

1. Upon making the necessary findings on issues not in controversy, the Director of Nuclear Reactor Regulation is authorized to issue a license to Applicants permitting fuel loading, low power testing, and operation of this facility at power levels not in excess of 5% of rated power, subject to the condition, however, that should the Commission reconsider and reverse its decision herein (CLI-82-20), this authorization is revoked.

2. Except as indicated in paragraph 1 above, Applicants' motion for reconsideration and clarification is denied.

Judges Hooper and Livingston concur but were unavailable to sign this Memorandum and Order.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**John H Frye, III, Chairman
ADMINISTRATIVE JUDGE**

Bethesda, Maryland
August 24, 1982

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Peter B. Bloch, Chairman
Dr. Jerry R. Kline
Mr. Frederick J. Shon**

In the Matter of

**Docket Nos. 50-440-OL
50-441-OL**

**CLEVELAND ELECTRIC ILLUMINATING
COMPANY, *et al.***

(Perry Nuclear Power Plant, Units 1 & 2)

August 30, 1982

In this Memorandum and Order the Board rules that it cannot go beyond the Commission's Statement of Policy on psychological stress issues (*47 Fed. Reg.* 31762, July 16, 1982) because the Statement had the effect of depriving it of jurisdiction over the intervenor's psychological stress contention. It also ruled that certification of the issue to the Commission was not proper because intervenor had failed to show why interlocutory review was necessary rather than review, in due course, upon appeal.

**RULES OF PRACTICE: EFFECT OF STATEMENT OF POLICY ON
BOARD JURISDICTION**

When a policy statement issued by the Commission orders licensing boards not to consider psychological stress contentions unless they meet specified criteria, boards are deprived of jurisdiction over such issues and are prohibited from inquiring into the procedural regularity of the policy statement.

RULES OF PRACTICE: CERTIFICATION OF ISSUES

A party may not obtain certification of an issue unless it demonstrates that it will suffer substantial harm if it is deprived of interlocutory review and is compelled to await completion of the licensing board's action before it pursues an appeal.

MEMORANDUM AND ORDER (Motion for Reconsideration or Certification)

Sunflower Alliance Inc., *et al.* (Sunflower) has requested the Board either to reconsider its July 20, 1982 decision excluding psychological stress issues from this proceeding (LBP-82-53A, 16 NRC 208 (1982)) or to certify the issue to the Commission. The grounds for the motion, which is supported by Ohio Citizens for Responsible Energy (OCRE), are: (1) that the Commission's Statement of Policy, "Consideration of Psychological Stress Issues", 47 *Fed. Reg.* 31762 (July 16, 1982), on which this Board relied, is not a rule and cannot restrict the Board's authority, which is granted by a rule (10 CFR §2.714), and (2) that the Commission's policy statement incorrectly interpreted *People Against Nuclear Energy v. United States Nuclear Regulatory Commission*, No. 81-1131, 678 F.2d 222 (D.C. Cir. 1982). OCRE also argues that the Statement of Policy is not binding on the Board, citing the dissenting view of Commissioner Thomas M. Roberts concerning the "Policy Statement of Information Flow." 47 *Fed. Reg.* 31482 (July 20, 1982) at 31483.

Since no party has challenged our interpretation of the Commission's policy statement, and since we find the statement to be binding on us, we conclude that the motion for reconsideration is without merit. In addition, since neither Sunflower nor OCRE has demonstrated any need for interlocutory review of this issue, the motion for certification also is found lacking in merit.

I. JURISDICTION

Our first concern is that §191.a of the Atomic Energy Act of 1954 created atomic safety and licensing boards solely as delegates of the Commission. That section states that "[T]he Commission is authorized to establish one or more atomic safety and licensing boards . . . to conduct such hearings as the Commission may direct and make such intermediate or final decisions as the Commission may authorize. . . ." It was pursuant to that statutory authorization that we were appointed. *Establishment of Atomic Safety and Licensing Board to Preside in Proceeding*, 46 *Fed. Reg.* 20340 (March 25, 1981).

It did not take a Commission rule to appoint us. It does not take a Commission rule to limit our jurisdiction. Hence, we find that the Statement of Policy effectively limited our jurisdiction over psychological stress issues.

OCRE has argued that the Commission's action improperly interfered with this Board's duty to uphold the law, and Sunflower has argued that the Commission has improperly altered the effect of 10 CFR §2.718, which gives the Board the authority to conduct hearings. Sunflower cites K. Davis, 3 *Administrative Law Treatise* §17:13 at 319-20 (2d Ed. 1980), in support of this proposition. However, we do not see any relationship between this action of the Commission, limiting this Board's authorization, and our responsibility to uphold the law or our §2.718 powers to conduct fair hearings. Hence, we find this argument to be without merit.

We conclude that the Commission has exercised its authority over our jurisdiction and that we may not consider whether the Commission's interpretation of *Pane* was correct.

II. EFFECT OF THE POLICY STATEMENT

OCRE is correct in arguing that policy statements, which are exempt from the notice and comment requirement of rulemaking pursuant to 5 U.S.C. §553(b)(A), ordinarily are not binding. On the other hand, agencies enjoy broad latitude in their prerogative to issue interpretations or policy statements and the limits on their prerogative are hotly debated. See Asimow, "Public Participation in the Adoption of Interpretive Rules and Policy Statements," 75 Mich. L. Rev. 521 (1976); 1 CFR §305.76-5. See also *Stewart v. Smith*, 673 F.2d 485 (D.C. Cir., October 1, 1981); *Chamber of Commerce of the U.S.A. v. Occupational Safety and Health Administration*, 636 F.2d 464 (D.C. Cir. 1979) (the agency's label on what it has done is suggestive but not dispositive); *Citizens to Save Spencer County v. EPA*, 600 F.2d 844, 876 (D.C. Cir. 1979); *Energy Reserves Group, Inc. v. Department of Energy*, 89 F.2d 1082, 1096 (T.E.C.A. 1978); *Joseph v. U.S. Civil Service Commission*, 554 F.2d 1140, 1153 n.24 (D.C. Cir. 1977); *Pickus v. United States Board of Parole*, 507 F.2d 1107 (D.C. Cir. 1974); *Rivera v. Patino*, 524 F.Supp. 136 (N. Dis. Calif., July 9, 1981); and Shapiro, "The Choice of Rulemaking or Adjudication in the Development of Administrative Policy," 78 Harv. L. Rev. 921, 947-950 (1965).

However, in this instance we have interpreted the policy statement as removing our jurisdiction. The intent of the policy statement is clear, and neither Sunflower nor OCRE has argued that we have misinterpreted it. It is intended to be binding on this Board. Under these circumstances, we cannot address psychological stress issues in our proceeding and we consequently cannot decide whether or not the Statement of Policy falls within the scope of 5 U.S.C. §553(b)(A). That argument must be addressed to other tribunals.

III. MOTION FOR CERTIFICATION

Sunflower and OCRE, neither of which had the opportunity to address the Commission prior to the issuance of the Statement of Policy which had the effect of dismissing their contention in this proceeding, ask that we certify the issue to the Commission. Certification has the advantage of permitting these parties to address the Commission directly on an issue that affects the conduct of their case.

Since this Board has refused to address their arguments because of lack of jurisdiction, there is some attractiveness to this request to address a properly authorized forum. However, certification is an interlocutory remedy and these parties have not shown how they will be injured by being left to their more ordinary remedy of appealing our decision at the conclusion of the case. At that time, these parties may attempt to persuade the Commission that its policy statement is illegal and incorrect, and we have not been shown why intervenors' interests will be prejudiced in any way by waiting until a later date. Indeed, the only possible prejudice would appear to be to Cleveland Electric Illuminating Company, whose operating license might be delayed were these parties ultimately to prevail on these grounds.

IV. ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 30th day of August 1982

ORDERED

(1) Sunflower Alliance Inc., *et al.*'s (Sunflower) August 4, 1982, Motion for Reconsideration is denied.

(2) Sunflower's August 4, 1982, Motion for Certification is denied.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE

Dr. Jerry R. Kline
ADMINISTRATIVE JUDGE

Mr. Frederick J. Shon
ADMINISTRATIVE JUDGE

Bethesda, Maryland

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**John F. Wolf, Chairman
Glenn O. Bright
Dr. Jerry Kline**

In the Matter of

**Docket Nos. 50-275-OL
50-323-OL**

**PACIFIC GAS AND ELECTRIC COMPANY
(Diablo Canyon Nuclear Power Plant,
Units 1 and 2)**

August 31, 1982

In this Initial Decision, the Licensing Board authorizes the issuance of a full power operating license for the Diablo Canyon Nuclear Power Plant, Units 1 and 2, subject to certain conditions specified by the Board and with the caveat that the decision not impinge on the status of the Commission's previously ordered suspension of the plant's low-power license or on the independent design verification program ordered by the Commission.

SAFETY STANDARDS: QUALIFICATION OF EQUIPMENT

Pressurizer heaters are not required to be designed and constructed to "safety-grade" standards by either Commission requirements or by the standards of 10 CFR Part 100, Appendix A, III.(a).

SAFETY STANDARDS: QUALIFICATION OF EQUIPMENT

Power-operated relief valves, when used to protect a system against low-temperature overpressurization, must be designed and constructed to "safety-grade" standards.

OPERATING LICENSE PROCEEDINGS: EMERGENCY PLANNING

State and local governments have the responsibility to set emergency planning zones around nuclear power plants. The zones may be geographically larger than those specified in the Commission's rules; however, Commission rules govern the test of adequacy of emergency planning.

OPERATING LICENSE PROCEEDINGS: EMERGENCY PLANNING

An early warning System must be capable of notifying essentially 100 percent of a population within 5 miles of a nuclear power plant within 15 minutes. Essentially 100 percent of the population within the entire EPZ must be notified within 45 minutes.

OPERATING LICENSE PROCEEDINGS: EMERGENCY PLANNING

Formal FEMA findings on the adequacy of offsite emergency planning are required prior to license issuance but are not required for the hearing.

APPEARANCES

For the Applicant:

Bruce Norton, Esquire, Norton, Burke, Berry, & French, P.C.

For the State:

Lawrence Coe Lanpher, Esquire, and Herbert H. Brown, Esquire, Kirkpatrick, Lockhart, Hill, Christopher, & Phillips

For the Intervenors:

Joel R. Reynolds, Esquire and David S. Fleischaker, Esquire, for San Luis Obispo Mothers for Peace

For the Nuclear Regulatory Commission Staff:

William J. Olmstead, Esquire, Donald F. Hassell, Esquire, George E. Johnson, Esquire and Bradley W. Jones, Esquire

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INITIAL DECISION

I. OVERVIEW

A. Nature of the Proceeding

This proceeding results from an application by Pacific Gas and Electric Company for an operating license for its Diablo Canyon Nuclear Power Plant, Units 1 and 2. The granting of the operating license is contested by the Joint Intervenors and Governor Brown.

The original hearing board in this case was established on November 24, 1967. Pacific Gas and Electric Company (Applicant) applied for authorization to construct and operate a nuclear power plant on July 15, 1968. A provisional construction permit was issued on December 9, 1970. The Applicant filed for an operating license on October 10, 1973.

Hearings on Applicant's environmental plan and preliminary issues in the operating license proceedings, as they became ripe for trial, were held in 1974 and 1975. Following intermittent hearings on the Applicant's environmental plan and on the operating license application a partial initial decision¹ was rendered on the environmental plan in 1978.

A partial initial decision² was issued in 1979 in the operating license proceeding. It included non-"TMI issues" such as the risk from aircraft and missile operations in the vicinity of the plant and the issue as to whether the plant could withstand any earthquake that could reasonably be expected to occur on the Hosgri fault three miles from the site.

With the imposition of the moratorium on the issuance of operating licenses following the TMI accident, the record in this case was closed. After "TMI requirements" were issued by the Commission, the record in Diablo Canyon was reopened to consider so called "TMI issues."

The Board granted Applicant's motion seeking authority to conduct low power testing.³

The present decision deals with the remaining issues related to full-power operation.

During the time this matter has been before this Atomic Safety and Licensing Board delays beyond the control of the Board have consumed several years. They

¹ *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-78-19, 7 NRC 989 (1978).

² *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-79-26, 10 NRC 453 (1979).

³ *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-81-21, 14 NRC 107 (1981).

include approximately two years' delay in construction of the plant due to labor trouble. The seismic problem held up the licensing process after the discovery of the close proximity of the Hosgri fault. The closeness of the fault, *i.e.*, three miles, was unknown to the Applicant when it selected the site. In addition, the TMI "accident" resulted in a year's delay in the application proceedings for the Diablo Canyon Nuclear Power Plant. Further delay has flowed from the questions raised about the Applicant's quality assurance program, the resulting suspension of the low-power testing license which had been granted for Unit 1 and the institution by the Commission of an independent design verification program which is still in progress.

B. Procedural Posture of the Case

The hearings on the operating application are closed. This opinion is the Board's Initial Decision dealing with the granting of a full-power operating license.

It is issued with a *caveat*. It does not, nor is it intended to impinge in any way on the status of the Commission's suspension of the Diablo Canyon Plant's low-power license (CLI-81-30; 14 NRC 950 (1981)) or on the independent design verification program ordered by the Commission (*id.*, at 955-958).

This Licensing Board's Initial Decision will, under the regulations, be reviewed by the Commission.

C. Identification of Parties

The parties who participated in these proceedings are:

1. The Pacific Gas and Electric Company, the Applicant, a public utility operating in the State of California.
2. Governor Brown was admitted as a representative of an interested State, *i.e.*, California.
3. The Joint Intervenors represent San Luis Obispo Mothers for Peace; Scenic Shoreline Preservation Conference, Inc.; Ecology Action Club; Sandra Silver; Gordon Silver; Elizabeth Apfelberg; and John F. Forster.
4. The NRC Staff.

D. Statement of Salient Facts

An emergency plan has been filed by the Applicant in this case. Such a plan is required to be submitted under Appendix E and 50.33(g) of 10 CFR Part 50. Requirements for the plan are contained in Appendix E and in §50.47. Implementing guidance is given by NUREG-0654, FEMA-Rep-1, Rev. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and

Preparedness in Support of Nuclear Power Plants”, November, 1980. The Joint Intervenors contended that the emergency plan is not acceptable in its present state of development. The Board’s analysis found otherwise.

The Joint Intervenors contend that the pressurizer heaters, block valves and power-operated relief valves at Diablo Canyon require a change in classification to safety-grade standards. The conditions which ordain a requirement that a system be classified as “safety-grade” are either set forth in 10 CFR Part 100, Appendix A, III.(a), or are mandated by a specific Commission directive. The record shows that the Joint Intervenors failed to prove their contentions regarding a change in classification. The Board’s analysis of the facts shows safety is not endangered by the use of the pressurizer heaters, block valves and PORV’s installed at Diablo Canyon.

E. Statement of Legal Issues and Their Resolution

1. Does the state of onsite and offsite emergency preparedness provide reasonable assurance that adequate protective measures will be taken in the event of a radiological emergency?

The Board has considered the relevant portions of the record in the light of the requirements set forth in Appendix E of 10 CFR Part 50 and the standards contained in §50.47 thereof, and finds that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

2. Is the qualification of the pressurizer heaters as safety grade required either by the Commission or by criteria of Appendix A of 10 CFR Part 100? Is connecting only ½ of the heater banks to the emergency power supply adequate for the purpose intended?

The Board finds that there is no requirement for the pressurizer heaters to be classified “safety grade” either by the criteria of Appendix A, Section III.(c) of 10 CFR Part 100 or by a specific Commission mandate. The Board further finds that connection of only one-half of the heater banks to the emergency power supply is adequate for the purpose.

3. Are the power-operated relief valves (PORV’s) and their associated block valves and instruments and controls required to be qualified as safety grade?

The Board finds that two of the PORV’s and their associated block valves and instrumentation and controls must be “safety-grade” due to their role in protection against low-temperature overpressurization of the system. The record establishes that the instant valve systems are “safety-grade.” The third system, which has no safety function, is “safety-grade” in all respects except for a supplementary pneumatic power source. The Board concludes that the PORV systems are adequate for the function to be performed.

F. Suggestions for Further Action

The Board recommends:

1. That County letters of agreement be obtained.
2. That the Staff assure itself of the reliability of radio communications which depend on the San Luis Obispo County microwave system.
3. That the Staff investigate the significance and degree of compliance with the requirements contained in footnote 1 of Part L of NUREG-0654.
4. That the Staff investigate whether the State has conducted an appropriate assessment of additional hospitals as required by criterion L(3) of NUREG-0654.
5. That the Staff assure, in consultation with FEMA, that the State plan contains a substantive response to the implementing criteria of Standard b(13) as regards radiological criteria for reentry of contaminated areas.
6. That the problem of potential role conflict in an emergency be addressed in instructions to emergency workers.

II. DECISIONS ON PENDING MOTIONS

Governor Edmund G. Brown, Jr., has moved "this Board to reopen the pending Diablo Canyon full-power license proceeding in order to permit the parties to submit evidence on quality assurance, to interrogate expert witnesses, and to advise the Board on the state of quality assurance at Diablo Canyon and the serious uncertainties affecting the safety of the as-built plant."

The motion to reopen the full-power hearing is misdirected, since the issue of quality assurance and quality control were adjudicated in the Board's partial initial decision on the low-power test proceeding issued July 17, 1981. It is that record that should be opened if there is newly discovered evidence to be considered. However, this Board no longer has jurisdiction of that record. Furthermore, on June 8, 1982, the Joint Intervenors filed a motion with the Appeal Board to reopen the record of the Licensing Board's partial initial decision.⁴ Earlier, on November 19, 1981, the Commission had suspended the low-power license pursuant to 10 CFR 2.202 because new information raised questions about the Applicant's quality assurance program.⁵ To find answers to the questions raised, the Commission ordered an independent design verification program which is currently in progress.⁶

⁴ *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-81-21, 14 NRC 107 (1981).

⁵ *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Unit 1), CLI-81-30, 14 NRC 950 (1981).

⁶ *Id.* at 955-958.

In a Memorandum and Certification to the Commission (ALAB-681, 16 NRC 146, 148 (1982)) the Appeal Board pointed out that: "Before we can reach the question whether joint intervenors' motion meets the standards for reopening the record, we must address the jurisdictional question raised by PG&E. Specifically, we must consider whether the Commission intended its November 19 enforcement order (or, if not, whether it now intends) to deprive the adjudicatory boards of jurisdiction to entertain the joint intervenors' motion regarding the QA/QC issues at Diablo Canyon."

It accordingly certified to the Commission under 10 CFR 2.785(d) several questions.

It appears that the answers to the questions certified by the Appeal Board to the Commission will control the action, if any, this Board takes in response to Governor Brown's motion to reopen the proceedings to take evidence on quality assurance. Accordingly, Governor Brown's motion is being held under advisement.

III. OPINION ON INDIVIDUAL ISSUES

A. Contention 1: Emergency Planning

Contention 1, as admitted by the Board in its Order of August 4, 1981, reads as follows:

PG&E and the combined onsite, state and local emergency response plans and preparedness do not comply with 10 CFR 50.33(g); 50.47 and revised Appendix E to Part 50.

The instant issues at bar are both extremely broad and complex. In order to present the resolution of these issues in an orderly fashion, the Board has considered them, *seriatim*, first as to compliance with 10 CFR 50.33(g) and then in the context of the planning standards as set forth in 10 CFR 50.47(b).

*Planning Standard (b)(1): Assignment of Responsibility*⁷

Onsite Preparedness

The Applicant has established an emergency response organization for coping with radiological emergencies. The Applicant's emergency plan assigns duties,

⁷ Planning Standard (b)(1) states: Primary responsibilities for emergency response by the nuclear facility licensee and by State and local organizations within the Emergency Planning Zones have been assigned, the emergency responsibilities of the various supporting organizations have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.

responsibilities and authorities of personnel assigned to the emergency response organization. The Applicant has developed letters of agreement for emergency assistance from offsite organizations. The Applicant has the staff to respond to an emergency and to augment its initial response on a continuous basis. (Findings 3, 6-14)

State and Local Responsibilities

The State of California has established its emergency planning zones (EPZ's) around Diablo Canyon in a manner which differs substantially from the Federal zones defined in 10 CFR 50.47(c)(2). There are a total of five emergency planning zones considered in this case; the California Basic EPZ, the extended EPZ, the California Ingestion Pathway EPZ, the Federal Plume Exposure EPZ, and the Federal Ingestion Pathway EPZ. The Board did not inquire into the technical basis for the California zones since they are larger than the Federal zones and encompass them. We conclude, without considering technical validity, that the State acted within its responsibility set by 10 CFR 50.47 when it established its emergency planning zones. (Findings 16-20)

We conclude that the Federal requirements are minimum standards for planning and not inflexible targets which must not be exceeded. This Board, however, has no authority to enforce State standards which exceed those required by Federal regulations. That is for the State to do. (Findings 21, 22)

Completion of Standard Operating Procedures

There are to be 31 standard operating procedures (SOP's) incorporated into the San Luis Obispo Emergency Plan. Of these, 21 are complete. The completed SOP's apply to cities, fire districts and school districts within the Federally-defined 10-mile plume exposure pathway zone, while the incomplete plans apply to organizations which are outside the Federal zone but within the State Basic Emergency Planning Zone. (Finding 28)

San Luis Obispo County is planning to observe the State defined Basic Emergency Planning Zone (BEPZ) in its completed emergency plans. Thus, all 31 SOP's (11 remaining) will have to be developed in the completed county plan. The evidence, however, shows that the SOP's are complete within the Federal 10-mile zone and that there are no insurmountable difficulties in completing the remaining SOP's. The existing procedures were developed by a consultant not only to serve the needs of the jurisdiction to which they apply but to serve as models to be used by other jurisdictions outside of the Federal 10-mile zone for development of their own procedures. Work is in progress on all of the incomplete procedures which are required for the State BEPZ. (Findings 25-28)

Staff and Applicant have argued and the Board has agreed that the requirements which the County plan must meet, insofar as this Board is concerned, are the Federal requirements as stated in 10 CFR 50.47 for a 10-mile plume Emergency Planning Zone (EPZ) and a 50-mile ingestion EPZ. Reasonable assurance for completion of the SOP's outside the 10-mile EPZ would not be required so long as they are complete within the 10-mile EPZ, according to Staff and Applicant. However, notwithstanding Federal requirements for planning zones, it is the State defined BEPZ which is to be implemented by the State, County and Applicant at Diablo Canyon. (Finding 25)

While there is no doubt as to the applicability of the requirements of 10 CFR 50.47 we find it incongruous to test the plan solely against the Federal standard in light of certain knowledge that it is the broader State plan which will be implemented. The intent of NRC and the Federal Emergency Management Agency (FEMA) on this is clearly stated in NUREG-0654:

"NRC and FEMA recognize that plans of licensees, State and local governments should not be developed in a vacuum or insulation from one another. Should an accident occur, the public can be best protected when the response of all parties is fully integrated." (NUREG-0654, p. 23)

Where, as here, the State has chosen EPZ's which are greatly different from those defined in Federal regulations, we find it appropriate to regard the Federal zones as minimum requirements for planning. In this case compliance with the Federal requirements, while necessary, does not necessarily assure integration of licensee, State and local planning as stated in NUREG-0654.

Thus, although our analysis focuses on the details of planning within the Federally prescribed EPZ's, we believe it appropriate to inquire into the status of planning beyond those zones far enough to assure ourselves that the incomplete procedures will be integrated into the overall County plan in a timely manner.

In the case of the incomplete SOP's, we have the needed reasonable assurance since reasonable progress has been made to date in developing the first 21 SOP's and San Luis Obispo County continues in its lead responsibility for plan development. Model plans exist for the development of the others, and the actual development is in progress and will be completed prior to full power operation. (Findings 28, 29)

Planning in Santa Barbara, Ventura and Monterey Counties

The northern boundaries of Santa Barbara County lie some 18 miles to the southeast of the Diablo Canyon plant. No planning for the plume exposure pathway is required for that county under 10 CFR 50.47 since it lies outside of the 10-mile EPZ defined therein. Neither is specific county planning required for the ingestion pathway since this planning is the responsibility of the State. (Finding 33)

While the Santa Barbara plan is not yet complete, the County has contracted to have such a plan prepared. The plan will be completed by mid-1982. It is being prepared by the same contractor who developed the plan for San Luis Obispo County. (Finding 33) Thus, there exists reasonable assurance that an emergency plan for Santa Barbara County will be integrated into the overall emergency response capability contemplated by the State even though not required by 10 CFR 50.47.

Monterey County falls within the limits of the 50-mile Federal ingestion pathway zone to the north of Diablo Canyon while portions of Ventura County fall within the State defined ingestion pathway zone to the South. The Board concludes that no County level emergency planning in these two Counties has been done nor is it required. The State will assume responsibility for interdiction of contaminated food or water in the ingestion pathway in the event such action is needed. (Finding 34)

Status of the State of California Emergency Plan

The State of California Emergency response plan had not had final approval by the State nor had FEMA conducted its final review or provided its findings at the time of the hearing. However, FEMA has reviewed and commented on an earlier version of the State plan and the State revised the plan using those comments. The State has completed approximately 85 to 90 percent of the State agency SOP's, and it is expected that the remainder will be completed along with the basic plan by July 1982. FEMA will review the plan and prepare findings at that time. (Findings 23, 24)

FEMA's interim findings, which were submitted November 2, 1981, addressed the County plan and not the State plan because of the specific relationships between the County and State in California. In this relationship it is the County which has the basic responsibility for protection of life and property. The State has backup responsibility, except for planning for the ingestion pathway zone (IPZ) and for recovery and reentry. Plans for these responsibilities are addressed in the State plan. Neither of these roles require immediate response in an emergency since they do not deal with immediate life threatening situations, and it is FEMA's view that the State could respond in these areas if needed. (Findings 15, 23, 24)

The board concludes: (1) that the State plan as it pertains to Diablo Canyon is complete but for a few SOP's,⁸ (2) that a systematic process of development and review between the State and FEMA has occurred, (3) that FEMA is aware of and

⁸ Among these items asserted by Joint Intervenors are specific procedures for California Polytechnic Institute and the California Men's Colony; both State jurisdictions. Both institutions are outside of the Federal 10-mile plume EPZ where evacuation would not normally be planned.

keeps abreast of current developments in the plan and will review it when it is complete, and (4) that there are no obstacles to completion of the plan.

The Board, therefore, concludes that there is reasonable assurance that the State plan will be substantially complete and capable of being implemented prior to full power operation of Diablo Canyon.

Letters of Agreement

The Applicant has submitted as part of its emergency response plan letters of agreement between itself and various organizations which would play a supporting role in the event of a radiological emergency. These letters are not detailed standard operating procedures but simply an agreement that an organization will provide some form of support if needed in an emergency. (Finding 13)

San Luis Obispo County also plans on incorporating letters of agreement in its emergency plan but has not done so yet. The County plans to contact Federal and State agencies and private businesses such as contractors, banks and gas stations for the purpose of obtaining supporting agreements. The number and nature of these agreements have not yet been worked out. (Finding 35)

The elements of planning important to an actual emergency response are incorporated into standard operating procedures, not letters of agreement. Letters of agreement are developed with organizations which could have some noncritical but useful supporting role to play in an emergency. (Finding 35) Our review leads to the conclusion that the letters of agreement were deferred and not neglected in the planning process. The record shows clearly that the County plans to obtain the letters and no problems in doing so were identified by any party. These letters should be obtained prior to full-power operation.

Availability of Emergency Workers

Joint Intervenors allege that emergency workers necessary to successful implementation of the emergency plan might not be available because of the possibility of role conflicts. This was described by Dr. Erickson as the conflict an individual might encounter between his duties to assure the safety of his family and his emergency duties. There is the possibility that a person might resolve the conflict in a radiological emergency by evacuating along with his family rather than reporting for emergency duty. Joint Intervenors feel that a scientific sociological survey of emergency workers is needed to assess this possibility among others which we will address later. (Finding 35)

The possibility of role conflict exists among emergency workers. The source of conflict on the part of individuals is concern for the safety of their families in an emergency. However, this concern can be reduced for most workers through

assurance that their families' safety has been provided for. None of the witnesses thought that trained professionals such as police or medical workers would resolve their conflicts in favor of abandonment of their emergency duties. The focus of concern was on the "volunteers" or general workers such as gas station attendants, bus drivers, and others who might have less critical but useful duties to perform during an emergency. (Findings 39-45)

We accept that some general workers might not report for duty in a radiological emergency; however, we have found sufficient mitigating circumstances to conclude that defections would not be of such magnitude as to jeopardize the successful implementation of the plan. We are convinced that most responsible workers would resolve their conflicts in a common-sense fashion by seeing to their families' safety and then reporting for duty. (Findings 42, 43, 44)

We are not convinced that a scientific survey of workers would add anything of significance to practical emergency planning. Since we know of and accept the phenomenon of role conflict, we think it more reasonable to simply address the matter in the instructions given to general workers who would have some emergency duties. We assume that responsible citizens will act intelligently on such instructions. The Board finds that no scientific survey of potential emergency workers is needed to assure their availability during a radiological emergency. (Finding 46)

Conclusion

Based on the evidence of record the Board finds that there is reasonable assurance that the requirements of Planning Standard 10 CFR 50.47(b)(1) have been or will be met prior to the granting of a license for full power operation.

The Board has determined that those aspects of State and local emergency plans which have been found to be incomplete as regards this standard should be completed prior to the granting of an operating license. Matters to be completed are: (1) FEMA findings on the adequacy of the State Plan as it applies to Diablo Canyon, and (2) authentication of SOP's which are required by Federal regulations. (Findings 30, 31)

The Board has determined that preparation of an emergency plan is not required by Federal regulations to be performed by Ventura, Monterey or Santa Barbara Counties. However, the Staff should assure itself, based on FEMA findings on the adequacy of the State Plan, that planning for Santa Barbara County has been considered and integrated into the overall State-local emergency response capability. We are not convinced that a scientific sociological survey of emergency workers to assess role conflicts would be of value for emergency planning. However, the problem of role conflict should be addressed in instructions to emergency workers. San Luis Obispo County's letters of agreement with supporting organizations should be completed.

Planning Standard (b)(2): Onsite Emergency Organization⁹

The applicant has adequately specified its onshift responsibilities for emergency response and maintains adequate staffing to provide initial facility accident response in key areas at all times. The applicant is capable of timely augmentation of response capabilities and it has specified interfaces among various onsite and offsite response activities. (Findings 50-58)

Requirements of NUREG-0654 Table B-1

Joint Intervenors question the ability to evaluate staffing requirements as specified in Table B-1 of NUREG-0654. This is based on Staff Exhibit 34, which is an evaluation of the Applicant's emergency plan performed by Battelle National Laboratory. The problem noted by Battelle was that Sections 5.1.7 and 5.2.1 and Table 5.2.1 of the Applicant's plan were not adequate to evaluate compliance with Table B-1 of NUREG-0654. The Staff witness thought the Battelle evaluation deficient in this instance because the Battelle reviewers had not reviewed the Applicant's implementing procedures. His additional review of the implementing procedures as well as a site visit led him to the conclusion that the Applicant's designation of Staff positions was in conformance with Table B-1 of NUREG-0654. Differences between the plan and the guidance resulted from different titles of positions used by the Applicant in its plan relative to those stated in Table B-1. (Findings 59-60) The Board, therefore, concludes that the review by the NRC Staff was thorough and that the Applicant's staffing plans are in substantive conformance with Table B-1 of NUREG-0654.

The guidance given in Table B-1 of NUREG-0654 sets goals for the time in which licensees should be able to augment their regular shift staff in an emergency. All but one of the goals are met. Studies of staff travel times by the Applicant show that during evenings and weekends the 30-minute augmentation goal for 11 additional persons cannot be fully met. The studies show that initial augmentation with 11 persons will take place over a period of from 20 to 45 minutes and possibly extend up to one hour. (Finding 62)

The board concludes that the deviation from guidance is due to the remoteness of the site and is of no significance to public health and safety at Diablo Canyon. The existing plant staff has the capability of initiating vital emergency response actions promptly without augmentation. The amount of delay is not excessive considering

⁹ Planning Standard (b)(2) states: On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available and the interfaces among various onsite response activities and offsite support and response activities are specified.

the remote location of the site and the overall ability of the Applicant to respond to an emergency and to augment its shift staff. (Findings 62-65)

Role Conflicts Among Plant Workers

Joint Intervenors raised the possibility that plant operators might evacuate themselves and their families during a radiological emergency rather than report for emergency duty. They cite a report prepared by the NRC Staff in the wake of the Three Mile Island (TMI) accident which states that rumors were heard after the accident that TMI operators might behave as described if another accident should occur. (Findings 66, 67)

Joint Intervenor acknowledged, however, that role conflict would not be expected to cause professionally trained emergency workers such as highway patrol officers and medical workers to abandon their duties in an emergency. (Finding 67)

We regard plant operators to be in the category of trained professionals who, as a group, are least likely to resolve potential role conflicts in favor of leaving their posts or failing to report for duty in an emergency. Furthermore, we see no necessary dichotomy between operators performing their duties and seeing to their family's safety. Reasonable individuals would do both. We therefore conclude that role conflict, even if it exists for a few plant operators, is not of sufficient magnitude to cause the Applicant's staffing plans under this standard to be unimplementable. (Findings 67-70)

Planning Standard (b)(3): Emergency Response Support and Resources¹⁰

The Applicant has made arrangements for requesting and using assistance resources. Arrangements have been made to accommodate State and local staff at the Applicant's emergency operations facility (EOF), and organizations capable of augmenting the response have been identified. (Findings 75-84)

FEMA has reviewed offsite plans for compliance with requirements of this standard and has no recommendation for corrective actions. (Finding 85)

Joint Intervenors object that: (1) the State and County plans contain no letters of agreement and that support resources have not been identified, (2) the State plan contains insufficient detail as to the extent of Federal assistance or times of arrival, (3) Counties other than San Luis Obispo County have not begun the planning

¹⁰ Planning Standard (b)(3) states: Arrangements for requesting and effectively using assistance resources have been made, arrangements to accommodate State and local staff at the licensee's near-site Emergency Operations Facility have been made, and other organizations capable of augmenting the planned response have been identified.

process, (4) several standard operating procedures (SOP's) are incomplete and (5) that emergency workers outside the danger zone might not move into that zone if asked to do so. The Board has addressed questions related to County letters of agreement, emergency preparedness in other Counties, standard operating procedures and responses of emergency workers in planning standards (b)(1) and (b)(2) and will not repeat that here.

The State plan contains adequate detail as to the extent of Federal assistance. Information on Federal agency response times is provided in the Applicant's Emergency Response Plan. (Finding 78) Based on the record, the FEMA findings, and the lack of contradictory evidence, the Board concludes that the plans for meeting this standard meet the requirements of 10 CFR 50.47(b)(3) and Appendix E.IV.A of 10 CFR Part 50, and that the plans conform to the criteria of NUREG-0654.

Planning Standard (b)(4): Emergency Classification System¹¹

The applicant has adopted a standard emergency classification and action level scheme which includes specified facility system and effluent parameters. State and local response plans call for reliance on information provided by the Applicant to determine their initial responses. (Findings 90-97)

FEMA has reviewed offsite preparedness relevant to this standard and has no recommendations for correction. (Finding 95)

Joint Intervenors object: (1) that the existing classification system failed to accomplish prompt public notification during the August 19, 1981 emergency planning exercise, (2) that the classification system should require sounding of sirens preferably at the alert level but as a minimum at the site area emergency level and (3) Applicant's emergency classification system is not in total compliance with NUREG-0654 based on the report of Battelle Laboratories which was submitted as NRC's Staff Exhibit 34. (Joint Intervenors Proposed Findings, p. 37)

In the emergency exercise held August 19, 1981 an order to simulate sounding of the emergency warning sirens was not given within 15 minutes after the onset of a general emergency. The Staff and the Applicant acknowledged that this was a deficiency uncovered by the exercise and that it should be remedied. We do not attribute the error to the emergency classification system, but simply to the failure of individuals to take the appropriate action in a timely fashion. The Staff has acknowledged that the error should be corrected and we expect that it will not be repeated. (Finding 93)

¹¹ Planning Standard (b)(4) states: A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.

We do not regard Joint Intervenors' assertion that the early warning sirens should be sounded at the alert level as being within the scope of this planning standard. We will address this matter in our discussion of Planning Standard (b)(5).

The deficiencies identified in the Battelle Report (Staff Exhibit 34) have been remedied in the Applicant's Emergency Plan. Therefore, there is no remaining controversy on this matter. (Finding 96)

Based on the evidence, the favorable FEMA findings, and the lack of contradictory evidence, the Board concludes that the plans for this requirement meet the requirements of 10 CFR 50.47(b)(4) and Appendix E.IV.a of 10 CFR Part 50 and that the plans conform to the criteria of Part D of NUREG-0654.

Planning Standard (b)(5): Notification Methods and Procedures¹²

The Applicant, the County and the State have developed plans for the methods and procedures they will use for disseminating information in the event of an emergency at Diablo Canyon. The initial notification of an accident or abnormal condition at Diablo Canyon will come from the plant. The plant will indicate in its initial messages the severity of the situation using the emergency action level classification system. Notification of any abnormal conditions at the plant will go to the San Luis Obispo County Sheriff's Office. Upon receiving such a notification the Sheriff or Watch Commander will in turn alert other offices and emergency workers. The actions to be taken by the Sheriff's Office are defined in the County Plan and are guided by the Emergency Action Level Classification. County departments, schools and other organizations will be notified simultaneously by means of monitor radio with a tone alert. (Findings 100-104)

Responsibility for public notification lies with the County. If the County decides to issue a warning to the public, it will warn not only that an emergency condition exists but it will also issue instructions to the public so that they may implement predetermined protective actions. Central to the public warning system is an area-wide siren system which has been designated the early warning system (EWS). This system has been installed within the State BEPZ. Its intent is to alert members of the general public to tune their radios to the emergency broadcast system so that they may receive emergency instructions. The emergency instructions will not necessarily be to recommend evacuation. Such instructions might

¹² Planning Standard (b)(5) states: Procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and followup messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established.

also include directions to take shelter, close windows and doors, shut off ventilation systems and to listen to radio or television for further information. The instructions would be based on recommendations of the Unified Dose Assessment Center (UDAC) with the approval of the County Direction and Control Group. (Findings 103, 104, 107, 108)

The siren system is not the only means of notification of the public. It has been anticipated that many of the members of the public might not be reached by a siren tone or might not be in a position to understand the meaning of the siren. Accordingly there have been developed supplementary means of warning. These include warning of populations in parks and on beaches by mobile vehicles, equipped with public address units. Other populations, such as those that are isolated or otherwise out of siren range, will be notified by automobile or off-road vehicles carrying public address systems. The effort will be assisted by helicopters as required. Ships at sea will be notified by marine radio and directly by the U.S. Coast Guard. Schools, hospitals, convalescent hospitals and like institutions will be notified by instructions from a tone alert radio system from the County. Certain persons, such as those deaf or homebound, will be warned by direct patrol car visits, home calls or teletype service as appropriate. These people will be preregistered as persons needing special assistance and the registration lists will be established at local police and fire stations. If notification is required in the State extended EPZ, it will be made by police and fire vehicles utilizing public address systems. (Finding 115)

Joint Intervenors attempted to show through cross-examination that the siren system was faulty in a number of ways. These include the fact that the siren system may be inadequate to notify persons inside of large structures, such as schools and hospitals; that the sirens are located only in the BEPZ, although the San Luis Obispo County Plan provides for the possibility of evacuation of the extended EPZ; and that mandatory sounding of the sirens should take place at the alert stage or as a minimum at the site area emergency stage in order to assure prompt public notification. Additionally, the overall warning system may not be adequate for notification of 100 percent of the population within the required time limit.

We deal first with the distribution of sirens within the EPZ. We note at the outset that an early warning system as required by 10 CFR 50.47 must be located within the 10-mile plume EPZ as defined in that regulation. However, the EPZ that will actually be used is the State of California BEPZ, which is larger than that defined by Federal regulations. The EWS sirens are located throughout the State of California BEPZ. (Finding 104)

Joint Intervenors presented no facts justifying extending the early warning siren system into the State extended BEPZ. We find no merit in their argument. (Finding 115)

Joint Intervenors further object that the siren system may be inadequate to notify persons inside large structures. This assertion is factually correct but already

acknowledged in the emergency plan. The Plan provides for alternative notification devices, such as tone alerts to be installed and activated by radio in these structures. Not all of these alerting devices had yet been installed at the time of the hearing. The Board will require that tone alert or equivalent warning devices should be operational in schools, hospitals and detention facilities and other large structures prior to full-power operation. (Finding 115)

Joint Intervenors and Governor Brown both fault the early warning siren system because it requires mandatory sounding only at the general emergency stage with discretionary sounding of the sirens at a site area emergency. They believe that the sirens should be sounded at the alert or site area emergency levels. (Findings 116, 117)

Governor Brown argues that the advantage of sounding the sirens at lesser levels of emergency is that the public would get an early warning and thus would be enabled to begin its preparation for evacuation in case one should later be ordered. We find little merit in this argument for two reasons. First, the media will carry information about any incident at Diablo Canyon and therefore the public would have advance warning in any case. Second, Governor Brown's argument presumes that alerts or site area emergencies will inevitably rise to a state of general emergency. This is invalid. While an initial emergency may progressively worsen, it is also possible that it will not. Under the plan, if it appears that an initial situation is going to progress into something more serious requiring protective action, the sirens can be sounded. If, on the other hand, it appears that the emergency will stabilize or that plant personnel will gain control of the situation there would be no need for sirens, and it would be a false signal at that time to have mandatory warning. It is, therefore, valid to retain discretionary capabilities for sounding sirens for a site area emergency. We, therefore, find that the County plan for mandatory sounding of sirens at the general emergency level and for discretionary sounding of sirens at the site area emergency level is valid and should not be disturbed. (Findings 118-120)

Joint Intervenors are in error in their assertion that 100-percent notification is required. The design objective of the initial notification system provides for essentially 100-percent notification of the population within five miles of the site within 15 minutes. Special arrangements are needed to achieve notification of populations within the entire EPZ within 45 minutes. In the Diablo Canyon area the population within six miles of the site is low, consisting of approximately 69 persons. (Applicant Ex. 80, Fig. 1.5-2) We have no evidence showing why these few people could not be notified within the guidelines of NUREG-0654. NUREG-0654 specifically recognizes that its design objectives do not guarantee that early notification can be provided throughout the EPZ with 100-percent assurance. (NUREG-0654, pp. 3-1, 3-3)

However, the plan calls for not only a siren system but for numerous special arrangements for notification of populations within the entire EPZ who may not

receive the initial notification by means of the siren. Tone alert signals, vehicle-mounted sirens, special visits by patrol cars, helicopter-mounted loud speakers, paging devices and telephone all combine with the early warning system to alert the general public and key personnel. These mechanisms are sufficient to give reasonable assurance that essentially 100 percent of the population could be notified of an emergency although 100-percent warning cannot be guaranteed. We conclude that this is a reasonable plan for notification of essentially 100 percent of the public within the plume exposure EPZ. (Finding 115)

The County plan calls for a cascade or sequential warning system to be used to alert County emergency workers. Joint Intervenors object that sequential or cascade call-down processes are prohibited by NUREG-0654, Appendix 3. The requirement of NUREG-0654 is a precaution against the time that would be lost if a single warning point had to notify all or a substantial number of other agencies and institutions in the County in an emergency. The requirement does not prohibit individual offices from summoning individual emergency workers by sequential calling methods. The planned system of warning is therefore not in conflict with NUREG-0654, Appendix 3. (Findings 111-113)

The Board concludes that the offsite plans for notification of the public are developed and that implementation is sufficiently complete to provide reasonable assurance that essentially complete and timely notification of the public can be achieved in accordance with 10 CFR 50.47(b)(5). The deficiencies in implementation noted by FEMA must be corrected and verified by the Staff and FEMA prior to full-power operation. (Findings 127-129)

Planning Standard (b)(6): Emergency Communications¹³

Based on the evidence, we find that the Applicant's on site emergency communication system is adequately designed and is capable of being implemented during an emergency. The record reveals no serious deficiencies in the onsite emergency communications system. (Findings 135-139)

Offsite communications in the County will rely on commercial telephone service, dedicated telephone service, radio-activated pagers and radio communication. Radio communication has an important role to play in a radiological emergency at Diablo Canyon and it was this aspect of communications that was most vigorously disputed. (Findings 142, 144)

The San Luis Obispo County radio communications network is complicated because of the problems imposed by mountainous terrain in the area, which inhibits radio communication. In order for radio communication to reach the entire

¹³ Planning Standard (b)(6) states: Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.

County, several mountaintop radio transmitters are used to broadcast the same message at one time. The message to be broadcast must be sent to the transmitters from the Sheriff's Department by way of a microwave transmitter system. The system would be vulnerable to failure if the Sheriff's microwave system failed or if one of the mountain repeater stations were to fail. The history of the microwave system reflects a number of both design and maintenance problems. It is these problems that Governor Brown and Joint Intervenors argue make the system inadequate for emergency response in the event of an incident at Diablo Canyon. Having studied the problems in the County communication system (Governor Brown Ex. 10), the Board is convinced that the communication system contains a number of design and maintenance difficulties which should be upgraded. However, the problems with the general system are of a noncritical nature for emergency response. (Findings 148, 149)

We reach this conclusion because of our review of the specific communication system required for emergency response. The communication system most directly involved in the emergency response plan is the local government VHF (green) channel. This specific part of the system is essential for issuing a signal for activation of sirens or backup signals for activation of sirens and for the emergency pager system which would be installed in hospitals, schools and County offices. The technical analysis of this system shows that for this specific channel the Applicant has agreed to purchase new radio transmitters, and that when these systems are in place the local government VHF system will be in excellent condition to handle communication needs for many years. (Findings 150-153)

The local government also runs a UHF system termed the County animal control system. This system would be used to enable health physics teams which go into the field in mobile units to communicate with the UDAC. The field teams could be isolated from UDAC if the microwave system failed. One UHF mountaintop transmitter for this system is of solid state design and apparently in good condition, however, requiring little more than normal maintenance to keep it operational. Another repeater radio will be added at Davis Peak. (Findings 154-156)

In view of the fact that the microwave system has not had a major failure in seven years, we are unable to find the system inadequately reliable at present, although it may well require future upgrading. (Finding 157)

The Board concludes that the critical requirements of the communication system for offsite communications in San Luis Obispo County are or will be met. The equipment needed to activate sirens, backup systems, pagers and tone monitors is on order and expected to be installed by May 20, 1982. (Finding 148)

The Board concludes that the offsite communication system for San Luis Obispo County is or will be adequate to cope with a radiological emergency at Diablo Canyon and the plans for emergency communications meet the requirements of 10 CFR 50.47(b)(6) and the criteria of Part F of NUREG-0654. The Staff, however, should assure itself of the continuing reliability of emergency communication

systems which are dependent on the County microwave system since the microwave system could be a weak link in County radio communications.

Planning Standard (b)(7): Public Education and Information¹⁴

Uncontested Findings

The Applicant has published periodicals entitled "Diablo Canyon Newsletters" which give details on various aspects of emergency planning at Diablo Canyon. This includes the description of radiation, the description of how the public would be notified in the event of an emergency, descriptions of the accident classification system and a number of other topics related to emergency planning. A page of emergency instructions has been included in the current San Luis Obispo County phone book. A media contact location has been established at Cuesta College Auditorium and public information officers have been designated for the coordinated dissemination of information to the public. (Findings 163, 164, 168-170)

Contested Issues

Joint Intervenors and Governor Brown fault the planning under this standard in three ways. First, they assert that San Luis Obispo County has not implemented a public information program. This assertion is based on the fact, which was undisputed in hearing, that the County has not yet published its information booklet or pamphlet. Second, based on the undisputed testimony of Mr. MacElvaine, they assert that the public knowledge of evacuation routes and expected responses in the event of an emergency is at the present time very low. Third, they assert that the public information program is deficient in its design because it does not take account of certain specific local information concerning attitudes and perceptions of the County residents. This information could be obtained through a survey of local populations and the resulting information could be used to sharpen the development of the County's public education program.

¹⁴ Planning Standard (b)(7) states: Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established.

General Public Knowledge

The County plans to publish an information booklet containing emergency information but had not done so at the time of the hearing. The booklet exists in draft form and has been reviewed by the NRC Staff. Because the booklet lacked the approval of the County Board of Supervisors, it was not printed in final form or issued to the public when the draft was complete. Issuance was expected on June 20, 1982. When issued, dissemination will occur through the State BEPZ. (Findings 165, 175)

The Board concludes that the early publication of this booklet is important to the overall information needs of the public regarding emergency planning in San Luis Obispo County and that its issuance should not be delayed. We accept the uncontradicted testimony of Supervisor MacElvaine that the current public knowledge of emergency response in San Luis Obispo County is low. (Findings 173-175) Adequate time should be allowed for general education of the public prior to reactor startup. We, therefore, require that a public information booklet be published at the earliest reasonable date and that it be disseminated to the public well in advance of full-power operation at Diablo Canyon.

Sociological Surveys

Joint Intervenors' premise in criticizing the public information program is that hazards of radiation are different from those of natural disasters and other accidents. They allege that a nuclear emergency involves a long term and invisible threat which provokes deeper and more lasting forms of public anxiety than other hazards; a consequence of this difference is that people will behave differently in a radiological emergency than they would during other disasters. In some cases they will overreact by evacuating earlier than advised, by moving longer distances than advised and in general doing more than is required. Another consequence is that at the same time a substantial number of people will underreact and become immobilized. These events will take place because people do not know what the dangerous substance looks like or feels like or how far it can reach out into the countryside. Joint Intervenors urge that a social survey of local populations be taken because it would provide important information on public attitudes towards these matters that could be used to improve the plans for public information. (Findings 176, 179-182)

The Board, however, is not convinced that a social survey would offer useful improvement in public information planning for several reasons. Even though it may be true that a radiological emergency is different from other kinds of emergencies, Intervenors' examples apply primarily to the aftermath of an accident. While radiation risk might provoke lasting forms of public anxiety, we are concerned under this standard not with long-lasting anxiety but with the adequacy

of an information program which instructs the public to seek shelter or evacuate in an emergency. These required actions are not notably different from those required in the face of other hazards and we conclude that a survey would not assist in improving the plan. (Finding 187)

We also have problems with the questions of overreacting and underreacting on the part of the public. In the first instance, there is no apparent hazard to public health and safety if overreaction occurs. Assuming overreaction was likely, we have no remedy beyond that which is already planned, which is to broadcast accurate, consistent information. (Finding 185)

The testimony shows that some public underreaction does occur in emergencies. Some people require repeated warnings and repeated information bulletins in order to become convinced that a hazard is real and that they should react. We see little value in a social survey in counteracting this phenomenon, however. The phenomenon of underreaction is already known. The remedy is repeated consistent warnings and information bulletins. The public will receive these through the emergency broadcast system. Thus, although we accept the possibility of underreaction among segments of the population, we do not accept the likelihood that a social survey confirming this would assist in the development of a better plan for public information. (Finding 184)

Joint Intervenors raised a number of contingencies which they feel a social survey would help to resolve. These contingencies include the possibility that parents of school-age children would seek out their children before evacuating, that the sources of information may not be considered credible by the population and that people will not follow instructions regarding evacuation directions, or that they may take individual evacuation directions which the plan does not contemplate. (Finding 181)

Our examination of the record does not reveal any mandatory requirements pertaining to these contingencies one way or another. The plan provides for the busing of children out of the danger zone in an emergency. It does not prohibit parents who are not satisfied with this arrangement from picking up their children before evacuating. The plan does not prescribe mandatory evacuation routes, but published information shows routes available for evacuation. The choice of routes and destinations is left to the people evacuating. As to the credibility of information, Intervenors' witness agreed that the populace, on being warned of danger, would respond appropriately. (Finding 178)

An overview of what is required in public evacuation would be helpful in contemplating the validity of these contingencies. The Federal regulations are based on analyses (NUREG-0396) that show that public health and safety can be protected if the public evacuates the plume EPZ, which is an area having a radius of about 10 miles from the plant. It is established on our record that the population in the annulus from 0 to 6 miles from Diablo Canyon numbers approximately 69 persons. Thus, it is clear that most of the population must be evacuated from the

annulus from 6 to 10 miles in order to protect health and safety as contemplated in the Federal regulations. The longest net distance from the plant that the vast majority of the population would have to travel in order to secure protection from plume irradiation is 4 miles.¹⁵ Regardless of what the individual citizen's ultimate destination is or the distance travelled or directions chosen, the minimum actions that must be taken to obtain radiation protection appear simple and straightforward. Within this perspective, we conclude that the numerous contingencies alluded to in Joint Intervenors' testimony would not cause the plan to fail even assuming they were to occur.

If we were to order a survey, Dr. Johnson would have us gather data on socioeconomic and demographic population characteristics, for example, race, ethnicity, age, sex structure, family size, occupation, education, automobile ownership and numerous other characteristics. However interesting such data might be, it is irrelevant to the task of informing the public about the necessity to travel a limited distance from Diablo Canyon in an emergency. (Findings 185, 186)

The Board found Dr. Mileti's testimony more credible as regards the public information program. His view was simply that a number of disasters of other types have been studied and that as a result of these studies sufficient knowledge exists to conduct an adequate public information program. (Finding 177) This appears to be all that is called for by Standard G of NUREG-0654. Part 2 of that standard states "that the public information program shall provide the permanent and transient adult population within the plume exposure EPZ an adequate opportunity to become aware of the information annually." Thus, a program that makes the public aware of the information on emergency planning and evacuation is sufficient. NUREG-0654 presumes that citizens will act reasonably on the information that is provided to them.

The Board concludes that the actions planned by the Applicant and County under Planning Standard (b)(7) give reasonable assurance that the public can and will be given adequate information on how they will be notified and what their actions should be if a radiological emergency should occur at Diablo Canyon. The requirements of Part 50.47(b)(7) and the criteria of NUREG-0654 part G have been or will be met. We decline to order a social survey as advocated by Joint Intervenors and Governor Brown since it is doubtful that the results of a survey could be used to improve public information planning.

We conclude that the current level of public understanding of emergency response is low. Therefore, publication and distribution of an information booklet should take place at the earliest reasonable date well in advance of reactor operation.

¹⁵ The resident population in that annulus is about 17,500 persons. (Applicant Ex. 80, Fig 1.5-2) Actual distances they must travel will vary because all roads do not follow the shortest possible route. (*Id.*, Fig 1.5-6) The conclusion is not altered, however.

Planning Standard (b)(8): Emergency Facilities and Equipment¹⁶

The Board has reviewed the full record on this standard and finds that the Applicant and the County are in substantial compliance with the guidance of NUREG-0654. The majority of items required under this guidance were uncontested. We conclude that the Applicant has submitted an adequate description of its emergency facilities and equipment, that the Staff and FEMA review has been adequate and that adequate emergency facilities and equipment exist or will be provided to cope with a radiological emergency at Diablo Canyon. (Findings 192-197)

The FEMA review of this standard resulted in its recommendation for installation of additional communications equipment and a backup power source for the Emergency Operations Center (EOC). Agreements with the Applicant and County have been reached and FEMA will verify that corrective actions have been taken when they are complete. (Findings 209, 210)

Joint Intervenors objected that although an EOF has been established it is inadequate because it is housed in a trailer on an interim basis until the permanent facility is completed in about mid-1983. They claim that this could not be relied upon during adverse environmental conditions. These conditions, however, were unspecified and the Board found them vague and unsupported by evidence. (Finding 198)

Joint Intervenors assert that the Operational Support Center (OSC) is in violation of NUREG-0654 requirements that specific equipment be stored there. The required equipment includes respiratory equipment, protective clothing, portable lighting, monitoring equipment, cameras and communication equipment. They object that, in spite of the fact that the center might accommodate up to 200 people, only two emergency kits are stored there. This appears to be a possible misunderstanding on the part of Joint Intervenors that the people who would assemble at the OSC would be outfitted with protective equipment there. This is not in the plan. The plan specifies that onsite personnel will be outfitted with protective equipment elsewhere in the plant. Emergency kits are in the OSC to be used only in the event of a special need. There is opportunity for personnel to equip themselves with respiratory equipment, protective clothing, portable lighting and monitoring equipment elsewhere on site. (Findings 199, 204)

No special precautions for habitability have been taken for the OSC. The intent is to use it as an assembly area for onsite personnel in an emergency. If the OSC should become uninhabitable during an emergency, it would be evacuated. Equipment stored there is intended to aid an evacuation. After reviewing the plan and the

¹⁶ Planning Standard (b)(8) states: Adequate emergency facilities and equipment to support the emergency response are provided and maintained.

testimony for the OSC we conclude the equipment stored there is reasonable for the purpose intended. (Finding 200)

The Board concludes that adequate emergency facilities and equipment to support the emergency response have been or will be provided and maintained in accordance with the requirements of Planning Standard (b)(8). (Findings 206-208) Correction of the deficiencies noted by FEMA for this planning standard should be verified as being complete prior to plant operation. (Findings 209, 210)

The Board concludes that the requirements of 50.47(b)(8) and the criteria of Part H of NUREG-0654 have or will be met promptly by the Applicant and San Luis Obispo County.

Planning Standard (b)(9): Accident Assessment¹⁷

The Applicant has made an adequate demonstration of its capabilities for assessing and monitoring a radiological emergency at Diablo Canyon. It has the onsite capability and resources to assess an accident throughout its course and it has the capability of post-accident sampling and radiation monitoring in the plant. The Applicant has the capability of assessing its source terms in the event of an accident and in establishing the magnitude of release of radioactive materials based on plant system parameters and effluent monitors. It has an Emergency Assessment and Response System (EARS), a computerized assessment capability for tracking a plume under a variety of meteorological conditions, and it has meteorological instruments capable of supplying the data needed for such computations. It has redundant means for determining release rates and projected doses if the instruments used for this assessment are inoperable, and it has the capability for field monitoring. (Findings 214-223)

The County has established the capability for field monitoring. Rapid radiological assessment capability exists through the UDAC and the EARS system. Means exist to relate contamination levels to dose rates for key isotopes in the environment. Capability exists for tracking the airborne radioactive plume using Federal and State resources. EMA has found the County capabilities to be satisfactory under this standard. (Findings 219, 220, 243)

UDAC Calculations

Joint Intervenors object that the County personnel who perform the hand calculations in the UDAC receive only annual drills and do not perform these calculations in the course of their normal employment. They assert that this is not

¹⁷ Planning Standard (b)(9) states: Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.

adequate to assure prompt, accurate or effective functioning in the UDAC. The required calculations are specified in detail in Appendix J of the Applicant's Emergency Plan. These calculations would be difficult for a layman; however, an expert should be able to perform the required computations with no difficulty given the guidance available. The principal computations will be made by computer; backup hand computations will be made in the event that the computer system fails during an emergency. Under these circumstances, we conclude that annual drills on the required computations are adequate to enable the UDAC Staff to make the computations if needed. (Finding 221)

Accuracy of Plant Vent Monitors and Meteorological Model

Joint Intervenors object to the fact that the plant vent monitor readings which are used to estimate radioactive release in the event of an emergency have an error band which has not been estimated. The testimony shows that these measurements may have errors or uncertainties in the range of approximately 10 to something less than 50 percent. The guidance contained in Regulatory Guide 1.97, Revision 2, suggests that such readings should have errors which are within a factor of 2 of the correct value. We conclude, therefore, that the errors inherent in the instrumentation for vent monitoring are within that guidance. (Findings 224, 227)

Vent monitor readings are not the only means of determining releases. They can also be determined from samples and flow rate data. This is a better method of doing it than by vent monitor readings. Vent monitor readings are used for a prompt assessment of radiation release. However, the dose assessments needed for public health and safety would be taken from field measurements, which are accurate. There is, therefore, no endangerment to public health and safety implicit in the instrument error levels which have been specified for vent monitor readings. (Findings 225, 226)

Joint Intervenors assert that there are unquantified errors in deposition velocity, plume height and dispersion prediction, which are parameters used by the meteorological dispersion model, or results calculated from the model. The meteorological dispersion model is used for tracking the plume and giving guidance to field teams, but not as a principal means of dose assessment. Field monitoring teams will use the guidance by going to the locations of predicted radioactivity and taking actual measurements. In view of the conservatism built into the meteorological model, its intended use, and the planned means for dose assessment, we conclude that the uncertainties inherent in the model do not create any public health and safety concerns. (Findings 228-230)

Adequacy of Accident Monitoring Equipment

Joint Intervenors assert that the Applicant has failed to demonstrate compliance with applicable accident monitoring instrumentation guidance contained in Regulatory Guide 1.97, Revision 2, that adequate accident monitoring instrumentation equipment to support the emergency response is maintained and in use. This refers to the same issue raised by Governor Brown in relation to a number of items that required correction under the Diablo Canyon Low-Power Operating License.

The Applicant has made a written commitment to the Staff to correct the items needed for compliance with Revision 2 of Regulatory Guide 1.97. The commitment identified items which needed no correction and items needing correction and indicated that such corrections will be made by June 1, 1983 as required. The equipment needed to satisfy this planning standard, however, was contained in the list of items which require no correction. The Applicant is already in compliance as regards the equipment needed for radiological monitoring under this planning standard. The regulatory staff has adequate enforcement capability to ensure that the Applicant meets its written commitment for the remaining items. (Findings 231-234)

Environmental Qualification of Equipment

Governor Brown asserts that the emergency operating procedures for the operators at Diablo Canyon are inadequate because they do not contain notations as to the capability of instruments which might be relied on in the event of an emergency. The Governor fears that in an emergency an operator may be instructed to rely on equipment which might not be available and that the operator is not specifically instructed as to the possible unavailability of such equipment due to its qualification status. The Applicant has recognized this problem and is in the process of assuring that its operators are aware of which instruments mentioned in its revised and expanded emergency operating procedures may not be available due to lack of qualification. (Findings 235-239)

The Staff's criteria for determining whether or not instruments should be environmentally qualified include consideration of the effects of qualification or lack of it on operators. Equipment may remain unqualified for harsh environments if, among other things, its failure will not impact safety related functions or mislead an operator. The criteria for determining whether equipment should be environmentally qualified as listed in the Staff SER Supplement 15 for Diablo Canyon appear reasonable. We conclude that comprehensive environmental qualification of equipment, which was one of the alternatives stated by Governor Brown, is not warranted. (Findings 240, 241)

The remaining issue, therefore, appears to be whether or not asterisks to identify non-qualified equipment should appear in the emergency operating procedures of the Applicant. If they do, they would supplement actions already being taken by the Applicant to assure that its operators are aware of equipment lacking environmental qualification which might be relied upon in an emergency. We conclude that the issue is insignificant in view of the planned actions and the qualification criteria, and we decline to order that asterisks be placed next to environmentally unqualified equipment in the emergency plan since this would add practically nothing to safety. (Finding 242)

Adequate capability exists for assessing significance of any radiological release from Diablo Canyon and for monitoring such releases. The Board concludes that the Applicant and the County have made adequate provisions for accident assessment under Planning Standard 50.47(b)(9) and the criteria of Part I of NUREG-0654.

Planning Standard (b)(10): Protective Actions¹⁸

The Applicant's emergency plan, in regard to a range of protective responses as well as guidelines for a choice of protective actions consistent with Federal guidance and protective actions for ingestion exposure pathway EPZ, fully satisfies the planning standard and evaluation criteria for Planning Standard (b)(10) of 10 CFR §50.47. Based on a review of the FEMA findings, the emergency plans meet the requirements of Planning Standard (b)(10). The plans are clearly adequate and capable of being implemented. (Findings 246-260)

The principal challenge to this planning standard came from Joint Intervenor's technical witnesses who disputed the accuracy of evacuation time estimates that had been determined by two different contractors of the Applicant. The basis for the attack was that the contractor studies had not utilized sufficiently conservative assumptions in deriving their estimates. The conservative assumptions urged by Intervenor were designed to show how the evacuation plan could fail if the worst events were to take place. (Finding 258)

The evacuation time estimates, however, are needed to plan for traffic control and to aid in the decision to advise sheltering or evacuation in an emergency. Conservative assumptions do not aid these goals. The time estimates must be realistic since wrong decisions concerning evacuation might be made if based on overly conservative estimates. While it is useful to probe the existing estimates to

¹⁸ Planning Standard (b)(10) states: A range of protective actions have been developed for the plume exposure pathway EPZ for emergency workers and the public. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.

determine how the plan might fail, we conclude that this is a poor basis for creating the plan. The time estimates were derived over a realistic range of conditions and degrees of traffic control. This will be an aid to decision-making in an emergency. Decision-makers are not left without options, if conditions appreciably worse than those assumed in the evacuation plan prevail at the time of an emergency. The Board concludes that evacuation time estimates were derived that are consistent with Appendix 4 of NUREG-0654 and that they realistically cope with a range of likely conditions that might occur during an emergency. (Findings 259, 260)

The Board finds that the evacuation time estimates were done properly and that the Applicant's and San Luis Obispo County's emergency plan is in conformance with 10 CFR 50.47 (b)(10) and the criteria of Part J of NUREG-0654.

Planning Standard (b)(11): Radiological Exposure Control¹⁹

The record shows that the Applicant has established a program which, together with those of San Luis Obispo County and the State of California, provides the means for controlling radiological exposures of emergency workers. They conform fully with the standards set forth in 10 CFR 50.47(b)(11). The implementing programs include guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides. The standards of 10 CFR 50.47(b)(11) have been fully met. (Findings 262-266)

Planning Standard (b)(12): Medical and Public Health Support²⁰

The Board concludes that there is reasonable assurance that contaminated, injured individuals either on or off the site can be properly treated in either primary receiving or backup hospitals in an emergency. The number of ambulances available for transporting individuals is reasonable and the persons who would treat contaminated injured individuals are reasonably prepared. French Hospital, which would be the local primary receiving hospital, has prepared an extensive emergency plan, and the Board concludes that it is prepared for treatment of such injuries. (Findings 268, 270-273)

FEMA has found the status of offsite preparedness under this standard to be satisfactory. (Finding 280)

¹⁹ Planning Standard (b)(11) states: Means for controlling radiological exposures, in an emergency, are established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides.

²⁰ Planning Standard (b)(12) states: Arrangements are made for medical services for contaminated injured individuals.

Joint Intervenors have criticized preparation for this planning standard on the basis that the number of ambulances and the number of physicians available for treating contaminated injured individuals are not adequate in the event of a major radiological emergency at Diablo Canyon. Their reasoning appears to be based on the hypothesis that radiation contamination of otherwise uninjured individuals requires emergency transportation and prompt treatment at a hospital. Our record, however, shows otherwise. The appropriate remedy for personal contamination with radioactive material is decontamination. This does not require the emergency services of a physician. Decontamination centers have been prescribed by both the State and County in their plans. Individuals will be able to go to these centers for radiological survey and decontamination if needed and there would be no need for them to be transported to a hospital on an emergency basis. (Findings 275, 279, 282)

The medical problem which this plan addresses is that of the physically injured individual who is also contaminated. There is no reason to believe that there would be large numbers of physically injured contaminated individuals offsite in the event of an emergency and, therefore, the facilities which normally serve the County would be expected to serve its emergency needs during a radiological emergency. In view of the foregoing, we see no value to conducting offsite drills to transport persons to a hospital. (Findings 275, 278)

The Applicant's witnesses were unable to estimate how many injuries might occur onsite in an emergency. We conclude, based on the inconclusive testimony, that such an estimate would be too speculative to be of significant aid in planning. We conclude, however, that the availability of 10 to 12 ambulances in addition to supplementary helicopter service and the availability of physicians creates reasonable assurance that individuals injured and contaminated at the plant during a radiological emergency could receive prompt transport and treatment for their injuries. (Findings 270, 271, 273, 277)

Our record does not address the listing of the integrated public health and medical treatment facilities existent in the County as prescribed in Footnote 1 of Part L of NUREG-0654. We have no way of assessing the significance of this requirement, and we recommend that the Staff investigate the significance and the degree of compliance by the State and local agencies in the Diablo Canyon area and that it assure itself of an appropriate resolution. We also recommend that the Staff assure that the State has conducted an appropriate assessment of other hospitals as required by Criterion L(3) of NUREG-0654. (Findings 281, 283)

With the exceptions noted the Board concludes that the planning organizations (Applicant, County and State) are in compliance with 10 CFR 50.47(b)(12) and the criteria of Part L of NUREG-0654.

Planning Standard (b)(13): Recovery and Reentry Planning and Postaccident Operation²¹

This planning standard calls for general plans on the part of the Applicant, the County and the State for conducting reentry and recovery operations in the event of a radiological accident at Diablo Canyon. Each organization has developed general plans and procedures for reentry and recovery and has described generally the means by which decisions to relax protective measures will be reached. The Licensee has specified individuals by position and title who have authority and responsibility in the facility recovery organization. The Licensee's organization includes technical people with responsibilities to develop and evaluate recovery and reentry operations. (Findings 287-292)

The Licensee and the State have adequate means for informing members of response organizations that a recovery operation is to be initiated and of the changes in organizational structures that may occur. Adequate means for continuing population dose assessment exist as part of the overall emergency response capability. (Findings 290, 291)

Joint Intervenors objected that neither the Applicant nor the State have estimated or provided for possible costs of reentry and recovery in their emergency plan. No such estimates or provisions are required in either NRC regulations or NUREG-0654. No such requirement should be imposed since such cost estimates would not be relevant to public health and safety. (Joint Intervenors Proposed Findings, p. 578; Finding 297)

Even though the criteria of Part M of NUREG-0654 are intended to be general, we conclude that the State of California plan for recovery and reentry is minimally adequate in technical content considering the State lead responsibility. In particular, this applies to specifications of radiological criteria by which decisions to allow reentry into an evacuated area are reached. However, based on the fact that recovery and reentry operations do not deal with immediate life threatening situations and that assistance from Federal agencies such as EPA and DOE would be available, we conclude that there is no danger to public health and safety created. The Staff, however, should assure itself, in consultation with FEMA, that the State plan contains substantive radiological criteria for allowing reentry into an evacuated area. (Findings 292-295)

We have reasonable assurance that a recovery and reentry operation could and would be undertaken in the aftermath of a possible radiological accident at Diablo Canyon. (Finding 298) The Board concludes that the principal emergency response organizations (Applicant, State and County) have met the generalized planning criteria of 10 CFR 50.47(b)(13) and Section M of NUREG-0654.

²¹ Planning Standard (b)(13) states: General plans for recovery and reentry are developed.

Planning Standard (b)(14): Exercises and Drills²²

The Applicant, San Luis Obispo County and the State of California have prepared plans for the conduct of periodic emergency exercises and drills. One cycle of exercises and drills was completed in 1981 and specific plans were formulated for the conduct of another such cycle in 1982. (Findings 301, 308, 318)

An integrated full-scale emergency exercise was conducted at Diablo Canyon on August 19, 1981. The simulated accident which formed the scenario for the exercise began with an unusual event situation which became progressively more serious until a general emergency was declared. The simulated accident required the mobilization of the Applicant's Emergency Response Organization as well as those of the County and of the State. The goals of the exercise were (1) to demonstrate a capability to respond to a developing emergency situation, (2) to serve as a training device and (3) to highlight potential problem areas to be corrected. (Findings 301, 302)

Several elements important to the overall emergency response were not observed during the 1981 exercise because necessary equipment was not available at the time. Items not tested include the siren system, the monitor receivers for hospitals and schools, the emergency broadcast communications link, and the set-up of the unified dose assessment center. FEMA has indicated an intent to test and observe these elements as the equipment is installed. The Board anticipates that these elements will be tested in the 1982 exercise as well. (Finding 307)

Joint Intervenor's perceptions of deficiency in the 1981 exercise rested principally on items they think should have been included but were not. In many cases the items that they identified constitute no more than a difference of opinion with the planners of the exercise as to what should have been included. The Board rejects assertions of Joint Intervenor's which rest on unsupported differences of opinion since we found no evidence to show that these would enhance the goals of the exercise or provide a more adequate demonstration of capability than was actually obtained. (Finding 313)

Joint Intervenor's feel that the exercise was faulty because general public evacuation was not included. However, NRC regulations state that the emergency exercise is to be carried out without mandatory public participation. We therefore find it necessary to reject all assertions either stating or implying that the exercise was defective because an actual evacuation was not ordered. (Finding 311)

Joint Intervenor's felt that the emergency exercise was defective because the early warning siren system was not available and that no backup means of notification was used. All parties agreed that testing of the emergency siren system

²² Planning Standard (b)(14) states: Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.

prior to plant operation is vital. It was not installed at the time of the 1981 exercise. There is adequate assurance that the siren system is now installed and will be tested during the summer of 1982. (Finding 307)

Section N of NUREG-0654 suggests that the scenario for emergency exercises should be changed from year to year such that all major elements of the plans and preparedness organizations are tested within a five-year period. We, therefore, do not take the lack of participation of several cities within the State BEPZ in the first exercise to be a serious defect in the planning for that exercise. We have noted that some cities' SOP's were not complete at the time of the exercise but were expected to be completed within the following year. We think it advisable for cities in the State BEPZ to take part in exercises in future years; however, we conclude that this is within the jurisdiction of the State to direct. (Finding 312)

We conclude that there is little to be gained by merely assuming adverse weather in an exercise as advocated by Joint Intervenors. NUREG-0654, Section N.1.B, however, suggests that some exercises be conducted during adverse weather. The same section also suggests that some exercises should be unannounced and it should not, therefore, be difficult to devise an exercise in the future to be conducted during an actual episode of adverse weather. (Finding 314)

The FEMA evaluation findings for the August 19 exercise show that numerous detailed suggestions for improvement of emergency plans were made by exercise evaluators and observers. The number and detail of items identified indicate that the observers and evaluators performed their tasks diligently. FEMA advised the participants, both in debriefing sessions and in its formal evaluation findings, of the nature of the defects found. A schedule has been set for their correction. The Board concludes that this process worked properly and that it provides reasonable means for the discovery and correction of deficiencies in onsite and offsite emergency plans. (Findings 303, 304, 307)

The Board concludes that the 1981 emergency exercise reasonably tested the Applicant's and the local and State organizations' capabilities for responding to an emergency at Diablo Canyon. The exercise provided training through experience for its participants and it provided an opportunity for the discovery of defects in planning and performance of individuals and organizations. On the basis of this performance and plans for future exercises, the Board finds there is reasonable assurance that meaningful exercises and drills can and will be performed to demonstrate the overall capability of responding to an accident at Diablo Canyon. We conclude that the Applicant and offsite organizations are in compliance with Part 50.47(b)(14) and the criteria of Part N of NUREG-0654.

Planning Standard (b)(15): Radiological Emergency Response Training²³

The Applicant's Emergency Plan, the State Emergency Plan and the County Plan provide adequate assurance that appropriate personnel both onsite and offsite have been and will be trained in radiological emergency response procedures and methods. Many personnel have received training. These include Applicant's employees who have received training in emergency procedures and radiological response onsite. These also include offsite emergency workers such as fire and police, California Department of Forestry and California Highway Patrol personnel. Medical personnel have received specialized training in radiological procedures. Personnel who would be a part of a radiological response have or will receive adequate training to enable them to perform their roles during an emergency. (Findings 321-325, 327, 328)

FEMA has found that planning for the second annual cycle of drills and exercises is necessary under this standard. The required planning is under development and FEMA will verify completion. (Finding 333)

Joint Intervenors asserted that the Corporate Emergency Response Plan should provide more specific information on training programs involving corporate emergency personnel. The Applicant revised its procedures to provide the information and the Staff reviewed it and found it adequate. The Board finds that this adequately resolved the issue. (Finding 329)

Joint Intervenors suggested that persons performing general emergency support roles such as auto repair, phone assistance, EBS personnel and other workers should have some form of radiological response training since they might be required to stay behind to perform their functions during an evacuation. None of the planning documents that we have before us prescribe any kind of specialized training for these workers and none of the emergency planning requirements of the NRC require it. The Board concludes that this is reasonable since we have no evidence that such workers would be exposed to an especially hazardous environment or that they could not rely on the monitoring which would be done by trained people in the event of an emergency. (Findings 330, 331)

There is no evidence that general support workers would or could be required to remain behind indefinitely during an evacuation. Emergency services of general workers would be needed primarily for the period during an evacuation and we presume that when the evacuation neared completion, they would evacuate along with the general population. The County plan treats these persons as though they were members of the general population. They will receive the same instructions that the general public receives in the public education program. We conclude that this is adequate in view of the nature of their duties and the lack of evidence that

²³ Planning Standard (b)(15) states: Radiological emergency response training is provided to those who may be called on to assist in an emergency.

they would be exposed to more hazards than the general public. (Findings 331, 332)

The Board concludes that the plans of the Applicant, San Luis Obispo County and the State of California are adequate to ensure that emergency response workers will be adequately trained in radiological emergency procedures. We find that the requirements of 10 CFR 50.47(b)(15) and the criteria of Part O of NUREG-0654 are met by the principal response organizations having training responsibility for emergencies at Diablo Canyon.

Planning Standard (b)(16): Responsibility for the Planning Effort: Development of Periodic Review and Distribution of Emergency Plans²⁴

The Board concludes that responsibilities for plan development and review and for distribution have been established by the Applicant and San Luis Obispo County. Training for emergency planners is being provided. The Board, therefore, finds that for all uncontested aspects of this standard there exist adequate documentation and planning. (Findings 337-341)

Joint Intervenors raised a number of issues based on their Exhibit 120 which consists of answers to interrogatories prepared by the Applicant in September 1981. These issues include: the fact that at the time the answers were prepared the Applicant had not designated an overall Emergency Planning Coordinator; that training requirements for emergency planners had not been specified; and that the method for conducting an independent annual review of emergency plans was inadequate and might not conform to the requirements of Part P of NUREG-0654. The Applicant, however, subsequently revised its corporate emergency response procedure implementing plans to remedy these deficiencies. The Staff reviewed each revision and found it adequate. (Findings 342-344)

Joint Intervenors objected that the County Board of Supervisors for San Luis Obispo County has not committed to pay for necessary efforts for maintenance and continued development and training required by this standard. This was not contradicted in testimony. However, the Applicant testified that it has made a commitment to assure that the funds necessary to maintain preparedness are available. The Board finds this an adequate resolution. (Finding 345)

FEMA found that offsite preparedness under this planning standard was adequate and had no recommendations to make. (Finding 346)

The Board concludes that the responsibility for the planning effort is adequately assigned and that planning meets the requirements of 10 CFR 50.47(b)(16) and the criteria of Part P of NUREG-0654.

²⁴ Planning Standard (b)(16) states: Responsibilities for plan development and review and for distribution of emergency plans are established, and planners are properly trained.

B. Contention 10: Pressurizer Heaters^{25, 26}

The pressurizer heaters are, in fact, classified as components important to safety, and comply with the requirements of that designation. It was pointed out by the Joint Intervenors that between the submission of the original contention and the time of the hearings, the definitions of “important to safety” and “safety grade” had been changed, and that the intent of the contention was that the pressurizer heaters should be safety grade, which requires the stringent criteria set out in the contention to be applied to the system. All parties agreed that that was the clear intent of the contention, and it was, therefore, litigated with the words “safety grade” substituted for “components important to safety”. (Finding 349)

In consideration of this contention, we need not discuss the specific criteria to be met by the system. The question presented to the Board is whether either a Commission requirement or Section III.(c) of Appendix A to 10 CFR Part 100 mandates that the pressurizer heaters meet the more stringent safety-grade criteria.

We first turn to the determination of whether the safety-grade qualification of the pressurizer heaters is required by the Commission. In the aftermath of the Three Mile Island investigation, the NRR Lessons Learned Task Force recommended to the Commission in NUREG-0578 that the pressurizer heaters be safety grade, as the system could not be maintained in a hot standby condition if they were not available. In NUREG-0737, the Commission decided which of the many recommendations of the NRR Lessons Learned Task Force would be adopted. Item II.E.3.1 of NUREG-0737 specifically addresses pressurizer heaters: they are classified as non-class I-E loads, and thus not required to meet safety grade design criteria. (Finding 351) The only requirement is that they be set up so that, in the event of loss of offsite power, they can be energized by the emergency power source. The Board can come to no other conclusion than that the Commission considered the question before us and decided that design and fabrication of the pressurizer heaters and associated controls to safety-grade criteria were not necessary.

We turn now to the requirements of Section III.(c) of Appendix A to 10 CFR Part 100. That section states the requirements for the imposition of safety-grade

²⁵ Contention 10, as originally submitted by Joint Intervenors for litigation in the low-power proceedings, was disallowed by the Board. The Commission subsequently directed the Board to accept the contention for the full-power hearings (CL1-81-22, 14 NRC 598 (1981)). The Board complied in its Order of September 30, 1981.

²⁶ Contention 10, as litigated, reads as follows: The staff recognizes the pressurizer heaters and associated controls are necessary to maintain natural circulation at hot stand-by conditions. Therefore, this equipment should be classified as “components important to safety” and required to meet applicable safety grade design criteria, including but not limited to diversity (GDC 22), seismic and environmental qualification (GDC 2 and 4), automatic initiation (GDC 20), separation and independence (GDC 3 and 22), quality assurance (GDC 1), adequate reliable on-site power supplies (GDC 17) and the single failure criterion. The Applicant’s proposal to connect two out of four emergency power supplies does not provide an equivalent acceptable level of protection. (Finding 348)

criteria in structure, systems and components for safe shutdown earthquakes. The components affected are those necessary to assure:

- (1) The integrity of the reactor coolant pressure boundary;
- (2) The capability to shut down the reactor and maintain it in a safe shutdown condition; or
- (3) The capability to prevent or mitigate the consequences of accidents which could result in a potential offsite exposure comparable to the guideline exposure of 10 CFR Part 100. (Finding 352)

The sole function of the pressurizer heaters is to aid in controlling the pressure in the primary coolant system. The pressurizer heaters act to increase the pressure; the pressurizer sprays act to lower pressure. (Finding 353) Thus, the pressurizer heaters clearly do not serve to protect the integrity of the reactor coolant pressure boundary.

There was some conflict between the testimony of Staff and Applicant as to whether a hot standby condition²⁷ could be maintained without the use of the pressurizer heaters, but we find this to be irrelevant to compliance with the second category of components in Appendix A. The requirement is for the capability to shut down the reactor and maintain it in a safe shutdown condition. Hot standby is an operational convenience condition, not a safety one. (Finding 354) Reactor pressure, as necessary for a safe shutdown, can be maintained by the reactor charging pumps, which are safety grade. (Findings 355, 356)

The remaining question is whether the pressurizer heaters are necessary to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to the guideline exposures of 10 CFR Part 100. The only situation identified by the parties which might relate pressurizer heaters to prevention or mitigation of an accident was maintenance of natural circulation, if needed, in the primary system. The Intervenors contended that the Three Mile Island experience showed that pressurizer heaters must be available to maintain enough pressure in the system to avoid steam blocking and a resultant lack of core heat removal.

Both Applicant and Staff point out that the Westinghouse system at Diablo Canyon and the Babcock and Wilcox system at Three Mile Island differed in vital ways. The Applicant testified that pressure in the system could be maintained by the charging system, which is safety grade, arguing that the point was supported by a test on the Sequoyah plant, which is essentially identical to the Diablo Canyon plant. The Staff maintains that the U-tube steam generators used in the Diablo Canyon system are basically different from the "candy cane" steam generators in the Three Mile Island system, and that because the high point of the primary system (the steam generators) is continually covered with secondary coolant, any

²⁷ Hot standby is defined in NUREG-0452, Rev. 2, as the condition for which the core is subcritical by at least 1% in reactivity and the coolant temperature is at or above 350°F. (Finding 357)

steam that is formed would be condensed by the steam generators and natural circulation would be maintained. The water-level maintenance system at Diablo Canyon is safety grade. (Findings 356, 358)

The Board finds the arguments by Staff and Applicant persuasive. We agree with Intervenor that until the appropriate tests, such as those done on the Sequoyah system, are performed at Diablo Canyon, the Applicant's position cannot be corroborated completely, but we do find that there is reasonable assurance that it will be possible to maintain natural circulation, using safety-grade systems as needed, without the use of the pressurizer heaters. Consequently, we find that pressurizer heaters need only meet the less stringent "important to safety" criteria.

Although Intervenor presented no testimony on the adequacy of connecting only two of the four heater banks to the emergency power supply, the Staff noted that the NUREG-0737 requirement for having the pressurizer heaters available during loss of offsite power was for the purpose of preventing a possible challenge to the emergency core cooling system. The Staff has analyzed the power needed to accomplish this end, and has concluded that operation of two of the heater banks is adequate for the purpose. This evidence is adequate to refute Intervenor's otherwise unsupported allegation. (Finding 359)

The Board, therefore, finds on the basis of the entire record relevant to this matter, that the qualification of the pressurizer heaters as safety grade is not required either by the Commission or by the criteria of Appendix A of 10 CFR Part 100, and that connecting only one-half of the heater banks to the emergency power supply is adequate for the purpose intended.

C. Contention 12: Block and Power-Operated Relief Valves^{28, 29}

All reactors operate with established limits on allowable pressure in the system. To assure that the limit is not exceeded, safety relief valves are provided. However, even in the course of normal operation, some mild pressure transients occur.

²⁸ As with Contention 10, this contention was originally disallowed by the Board, and was reinstated by direction of the Commission.

²⁹ Contention 12, as admitted by the Board in its Order of September 30, 1981 states:

Proper operation of power-operated relief valves, associated block valves and the instruments and controls for these valves is essential to mitigate the consequences of accidents. In addition, their failure can cause or aggravate a LOCA. Therefore, these valves must be classified as components important to safety and required to meet all safety-grade design criteria.

Relief and Block Valves. Joint Intervenor contend that the present classification of Diablo Canyon relief valves and associated block valves, instruments and controls does not comply with 10 CFR Part 50, Appendix A, Reg. Guide 1.26 and SRP (Reg. Guide 1.70), Section 3.22. Joint Intervenor also contend that General Design Criteria 1, 14, 15 and 30 are violated because relief and block valves have not been qualified under all transient and accident conditions.

(Continued)

If as a result of one of these transients a safety relief valve should open and fail to close after the passage of the transient pressure surge, a difficult operational problem would be presented. The safety valves cannot be blocked off for maintenance, as this could compromise their availability, and it is thus possible that the system pressure would have to be reduced to atmospheric pressure to close the valve.

To preclude this possibility, power operated relief valves (PORV's) are provided in the system. These valves are set such that they will open at some pressure lower than the set point of the safety relief valves. Inasmuch as they do not perform the ultimate safety function of the safety relief valves, they can be isolated from the system in case they should not close after opening. This ability is provided by block valves which are mounted upstream of the PORV's. (Finding 363)

Three PORV's are provided in each Diablo Canyon system. Only one is needed to provide the intended pressure relief function. Another is provided for redundancy, and for the performance of the only safety-related function required of the PORV's, which we will discuss, *infra*. These valves, their associated block valves and their instrumentation and controls are qualified to safety-grade standards. The third PORV has no safety-related function, but has been provided to allow full load rejection without the necessity of reactor trip. It is identical to the other valves and its associated block valve is safety grade. However, the instrumentation and controls are not safety grade inasmuch as the valve is not provided with an independent pneumatic power activator. (Finding 364) This lack could affect its ability to open under some conditions, *e.g.*, loss of all electric power, but does not affect its ability to close. (Finding 365)

The Electric Power Research Institute has conducted a wide-ranging program of tests on the field capability of pressure relief valves. Valves representative of those in the Diablo Canyon plant were included. The PORV representative of those used at Diablo Canyon was tested under full-pressure steam, water, transition phase and loop seal conditions. The valve passed all test criteria. (Finding 366) The representative block valve was tested under conditions representative of those expected at Diablo Canyon and fully opened and closed upon demand. (Finding 367) Results of these tests are expected to be documented formally by July 1982. The

Proper operation of power operated relief valves, associated block valves and the instruments and control for these valves is essential to mitigate the consequences of accidents. The TMI accident demonstrated this fact. In addition, their failure can cause or aggravate a LOCA. Therefore, these valves must be classified as important to safety and required to meet all safety-grade design criteria. However, the Diablo Canyon block and relief valves do not meet all safety-grade design criteria, in violation of the regulatory practices listed above. In addition, reactor coolant system relief valves form part of the reactor coolant system pressure boundary. When relief valve operation is unreliable, series block valves are relied upon to maintain the integrity of the pressure boundary. Despite these important safety functions, appropriate qualification testing has not been done to verify the capabilities of these block valves to function during normal, transient and accident conditions. In the absence of such testing and verification, the public health and safety are endangered.
(Finding 360)

Applicant will then submit plant-specific reports to the NRC for determination of applicability of the tests to the Diablo Canyon plant. (Finding 368)

The valves had been seismically qualified according to the criteria in place before institution of the ongoing seismic reverification program. The Applicant is reviewing this qualification and has committed itself to whatever steps are necessary to maintain seismic qualification of the valves. (Finding 369)

The Board finds from the above facts that there is more than reasonable assurance that the valves will operate as projected. However, even if a PORV malfunctioned and failed to close, thus causing the equivalent of a small-break LOCA, it would be isolated by its associated block valve. (Finding 370) If then the block valve failed to close and isolate the PORV, the capability of the ECCS would be sufficient to permit safe shutdown of the reactor without the core being uncovered and damaged. (Finding 371)

No evidence was presented which would indicate that proper operation of the PORV's was required to shut down the reactor and maintain the system in a safe shutdown condition. The use of PORV's and block valves in the shutdown process is mentioned in a number of emergency operating procedures; however, the procedures are designed to assure that the operator makes maximum use of all the systems available to him, whether they are safety grade or not. (Finding 372)

Proper operation of the PORV's and block valves is not required to mitigate the consequences of any of the design basis accidents considered in the FSAR. (Finding 373) The only safety-related function of the PORV's which was brought out in testimony is that of protection against low-temperature pressure transients, such as could be encountered during startup from a cold shutdown. In this situation, it is important that the vessel is protected until its temperature exceeds its nil ductility transition temperature. The safety valves, which supply protection during operation, are set too high to perform the function at low temperatures. The two safety-grade PORV's, which can easily be set to relieve pressure at low values, perform this function. The operators are trained to use the safety-grade PORV's in this situation. (Finding 374)

The Board finds, on the basis of the entire record relevant to this matter, that the PORV's and their associated block valves and instrumentation and controls are not required, with one single exception, by the criteria in Section III.(c) of Appendix A to 10 CFR Part 100 to be qualified as safety grade. The exception, that of protection from low-temperature overpressurization, is adequately provided for by two safety-grade PORV systems. The Board further finds that the PORV systems have been adequately designed, constructed and tested.

IV. CONCLUSIONS

A. The Board concluded, on the basis of all of the testimony and exhibits in the record, that the Applicant's and the combined on-site, State and local emergency

response plans and preparedness comply with 10 CFR 50.33(g); 50.47 and revised Appendix E to Part 50.

The Board also concluded that Governor Brown, as Intervenor for the State of California, and the Joint Intervenors failed to prove that changes are required in the classification of pressurizer heaters, block valves or PORV's.

B. (1) All other issues or contentions presented by the parties, but not addressed in this Decision, have been considered and found to be without merit.

(2) Findings of Fact and Conclusions of Law are attached hereto and incorporated herein by reference as if set forth at length.

V. FINDINGS OF FACT

A. Jurisdiction and Parties

The notice of hearing in this case was issued on January 25, 1974. The question presented was the licensing of a utilization facility under the Atomic Energy Act of 1954, as amended, the National Environmental Policy Act of 1969 (NEPA) and regulations promulgated and set out in 10 CFR Part 50.

The Parties to this proceeding are (1) Pacific Gas and Electric Company (Applicant), (2) the NRC Staff, (3) the San Luis Obispo Mothers for Peace, Scenic Shoreline Preservation Conference, Inc., Ecology Action Club, Sandra Silver, Gordon Silver, Elizabeth Apfelberg, and John J. Forster ("Joint Intervenors"), and (4) Governor Brown for the State of California.

The subject matter of this proceeding is the granting of a full-power operating license for the operation of the Diablo Canyon Nuclear Power Plant, Units 1 and 2, at San Luis Obispo, California.

B. Procedural History

Earlier partial initial decisions have disposed of all issues save the three that are presently being adjudicated in this full-power operating license proceeding. The record shows that the low-power testing license has been suspended by the Commission and that the Applicant, at the direction of the Commission, has instituted an independent reverification program as to the adequacy of the quality assurance program used in building the plant. The Board has set out a caveat in this Decision pointing out that only the Commission can place this Decision into effect.

VI. FINDINGS OF FACT ON INDIVIDUAL ISSUES

A. Contention 1: Emergency Planning

Contention 1, as admitted by the Board in its Order of August 4, 1981, reads as follows:

PG&E and the combined onsite, state and local emergency response plans and preparedness do not comply with 10 CFR 50.33(g); 50.47 and revised Appendix E to Part 50.

The instant issues at bar are both extremely broad and complex. In order to present the resolution of these issues in an orderly fashion, the Board has considered them, *seriatim*, first as to compliance with 10 CFR 50.33(g) and then in the context of the planning standards as set forth in 10 CFR 50.47(b).

Planning Standard (b)(1): Assignment of Responsibility

1. Planning Standard (b)(1) states: Primary responsibilities for emergency response by the nuclear facility licensee and by State and local organizations within the Emergency Planning Zones have been assigned, the emergency responsibilities of the various supporting organizations have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.

2. This planning standard was addressed in the submitted written testimony of Applicant Panel No. 1 Testimony ff. Tr. 11778, pp. 1-1 to 1-2, as modified and amended by Mr. S. M. Skidmore, regarding the adequacy of State planning (Tr. 12782) and in the testimony of Mr. J. R. Sears of the NRC Staff (Sears testimony ff. Tr. 12638, pp. 2-7). Governor Brown did not submit written testimony but did conduct cross-examination of the Applicant and NRC witnesses. Joint Intervenors submitted the testimony of Drs. Kai T. Erickson and James Johnson which dealt in part with requirements of this standard.

3. The Applicant has established an emergency response organization for coping with radiological emergencies within the plume exposure pathway EPZ and the State Basic Emergency Planning Zone (BEPZ). The responsibilities, authorities and duties of the personnel assigned to Applicant's emergency response organization have been set forth in the Applicant's emergency plan (Applicant Ex. 73), Corporate Emergency Response Plan and Implementing Procedures. (Applicant Panel No. 1 Testimony ff. Tr. 11778, pp. 1-1, 1-2, and Attach. 6; Sears Testimony ff. Tr. 12638, p. 2; Applicant Exs. 75, 75A, 77)

4. The Federal Emergency Management Agency (FEMA) made no recommendations for correction or improvement of offsite planning for this standard in its findings. (Applicant Panel No. 1 Testimony ff. Tr. 11778, Attach. 2)

5. Joint Intervenors assert that (1) there is no evidence of emergency planning in Santa Barbara, Monterey or Ventura Counties; (2) State and local plans contain no letters of agreement; (3) standard operating procedures are not complete; (4) Santa Barbara County Plan is not in compliance with applicable regulations; (5) none of the affected local jurisdictions have signed off or approved the San Luis Obispo County Plan; and (6) emergency workers might be unavailable because of role conflicts. (Joint Intervenors Proposed Findings, pp. 29-30, 34-35; Brown Proposed Findings, p. 46)

Onsite Preparedness

6. In the event of a radiological emergency an onsite emergency organization will be established. The onsite emergency organization will be staffed on an interim basis with personnel who are immediately available on the site at the time of the emergency. Additional plant personnel off site and on site will be notified that their assistance is required. The long-term emergency organization will be staffed by plant personnel as they arrive at their designated emergency response facilities. (Applicant Panel No. 1 Testimony ff. Tr. 11778, Attach. 6; Sears Testimony ff. Tr. 12638, p. 2)

7. The shift foreman initially assumes the position as site emergency coordinator and is responsible for command and control of onsite emergency operations until relieved by a senior plant management person designated for the site emergency coordinator position. The shift foreman activates the site emergency plan operations. (Applicant Panel No. 1 Testimony ff. Tr. 11778, Attach. 6, p. 5-3; Sears Testimony ff. Tr. 13628, p. 5)

8. A corporate recovery manager exercises overall command of the Applicant's emergency response operations. He provides direction and support for in-plant emergency response actions to the site emergency coordinator. He also coordinates the emergency actions with government and coordinates headquarter support through the corporate incident response center. (Applicant Panel No. 1 Testimony ff. Tr. 11778, Attach. 6, p. 5-3)

9. The plant is staffed 24 hours per day seven days per week by a minimum shift operating crew of 13 individuals. The operating crew comprises the initial onsite emergency organization in the event of an emergency. A liaison coordinator will notify the corporate recovery manager and other offsite agencies and organizations of an emergency. (Sears Testimony ff. Tr. 12638, p. 6)

10. The Applicant has established an emergency organization call list which provides primary and alternate personnel for each assignment in the long-term emergency organization. (Sears Testimony ff. Tr. 12638, p. 6)

11. Responsibilities for emergencies have been established for the following groups which are part of the onsite organization: site emergency coordinator;

emergency liaison coordinator; liaison assistant; emergency maintenance coordinator; emergency evaluations and recovery coordinator; emergency radiological advisor; site chemistry and radiation protection coordinator; Emergency Assessment and Response System (EARS) operator; Technical Support Center (TSC) emergency radiological monitoring teams; operational support center (OSC) supervisor; emergency operations coordinator; emergency operations advisor; shift engineer; fire brigades; evacuation coordinator; evacuation teams; first-aid and medical teams; data processing; advisor to the County emergency organization; and technical advisor to the public information recovery manager. (Applicant Panel No. 1 Testimony ff. Tr. 11778, Attach. 6, Table 5.2-1; Sears Testimony ff. Tr. 12638, pp. 4, 5)

12. The Applicant has revised Appendix E-2 of Procedure 1.1 of the Corporate Emergency Response Plan to remedy a shortage of personnel which was pointed out by Joint Intervenors in their Exhibit 120. (Applicant Ex. 85, Rev. 2A, pp. 21-22; Skidmore, Tr. 12757-758) This issue raised by Joint Intervenors is adequately resolved.

13. Offsite organizations which will have a role in emergency response have been identified and written agreements between the Applicant and State, local, private and Federal organizations have been developed. (Applicant Panel No. 1 Testimony ff. Tr. 11778, pp. 1-2; Applicant Ex. 73, App. E; Sears Testimony ff. Tr. 12638, pp. 3-6)

14. The NRC Staff has reviewed Applicant's plan and procedures and concludes that they meet the criteria of NUREG-0654 II.A. (Sears Testimony ff. Tr. 12638, p. 7)

State and Local Responsibilities

15. Responsibilities for emergency actions are partitioned between the State and San Luis Obispo County such that major emergency responsibility is assigned to the County. The State has specific emergency responsibilities for the ingestion pathway EPZ and for establishing criteria for reentry and recovery of contaminated zones after an emergency. (Applicant Ex. 73, App. C, pp. 24-28; Eldridge, Tr. 12709-710)

16. The State of California has defined its EPZ's in a different and enlarged manner than that described in 10 CFR 50.47(c)(2). Although different from the Federally defined zones, the California EPZ's encompass the Federal zones. (Applicant Ex. 73, App. C, pp. 6-8)

17. The State of California considered NRC regulations in setting its EPZ's. It concluded that there was a need for specific planning for plume exposure beyond the 10-mile radius required by NRC. The State defined a BEPZ for Diablo Canyon which extends about 15 miles to include the cities of Morro Bay, San Luis Obispo,

Baywood/Los Osos and the five cities area to the Southeast. (Applicant Ex. 73, App. C, pp. 6-8)

18. The State defined an extended EPZ for Diablo Canyon which goes out about 35 miles to the southeast (which is the predominant wind direction). (Applicant Ex. 73, App. C, pp. 7-8)

19. The State has defined a site-specific Ingestion Pathway Zone (IPZ) for Diablo Canyon. (Applicant Ex. 73, App. C, pp. 12-13)

20. The State of California's choice of EPZ's surrounding Diablo Canyon was a reasonable exercise of its responsibility under 10 CFR 50.47 to establish emergency plans.

21. The California EPZ's are sufficiently different from the Federally defined zones (10 CFR 50.47(c)(2)) that some confusion as to enforcement of the remainder of 10 CFR 50.47 requirements could arise. The requirements of Appendix E to Part 50 identify the requirements set forth as minimum requirements which must be met in attaining an acceptable state of emergency preparedness.

22. The Board will apply the "minimum requirement" standard in its review of emergency planning at Diablo Canyon. Emergency planning must comply with 10 CFR 50.47 and Appendix E as a minimum. Requirements of the State which go beyond these regulations for EPZ's are not prohibited; however, they are sufficiently different from the Federal requirements to be beyond the jurisdictional authority of this Board.

23. FEMA has not issued its findings on the adequacy of the State plan but expects plan completion and commencement of review in Mid-1982. FEMA is keeping abreast of the developments in the State plan and is participating with the State and San Luis Obispo County in the development of emergency plans. (Eldridge, Tr. 12706-712)

24. The State plan is in effect although incomplete as regards about 10 percent of its standard operating procedures. It is capable of implementation. The plan addresses the State's planned response for the IPZ and for recovery and reentry of contaminated areas which are its areas of primary responsibility in an emergency. (Applicant Ex. 73, App. C, pp. 24-28; Eldridge, Tr. 12708-710)

25. San Luis Obispo County is the lead agency for developing and implementing local emergency response in the vicinity of Diablo Canyon. (Ness, Tr. 12460-462) The County will implement the State EPZ's. (Ness, Tr. 12518-519)

26. The County plan was approved conceptually by the County Board of Supervisors on January 18, 1982. The conceptual approval was not a final approval but indication that planning, while progressing satisfactorily, remained incomplete in some respects and was still subject to revision. (MacElvaine, Tr. 12239, 12242, 12249-250)

27. The San Luis Obispo County plan is incomplete with regard to: (1) completion of standard operating procedures for cities, fire districts and school districts that are outside of the Federal 10-mile plume exposure pathway zone but

within the enlarged State BEPZ. (Ness, Tr. 12530, 12559-561); (2) incorporation of letters of agreement with government agencies or private businesses in the plan (Potter, Tr. 11804; Ness, Tr. 12457); and (3) authentication of the San Luis Obispo County plan by the other local jurisdictions. (MacElvaine, Tr. 12249)

28. The County emergency plan calls for 31 standard operating procedures (SOP's) to be prepared by cities, fire districts and school districts within the State BEPZ. Twenty-one of these SOP's prepared by organizations within the Federal plume EPZ are complete. The remainder of SOP's apply to organizations outside the 10-mile EPZ. These organizations will model their plans after the ones which have been completed. (Ness, Tr. 12453)

29. Joint Intervenors object that the SOP's are defective because none have received formal approval or have been signed off by various jurisdictions which are expected to implement the procedures. (Joint Intervenors Proposed Findings, p. 20)

30. Individual agency approval of standard operating procedures is not required. The County Board of Supervisors is ultimately responsible for approval of the SOP's, and has now given its conceptual approval of the present County plan. Each agency, for example, a city or sheriff's department, develops its own plan. The County staff works cooperatively with these organizations until some version is found agreeable. At this point, the County and the agencies consider it final and could implement it even though no final signature approval is provided. (Ness, Tr. 12528-12530)

31. Signature spaces are provided in the San Luis Obispo County Plan for the purpose of authentication by those who prepared the individual SOP's and not to signify approval by some other reviewing authority. Since the SOP's are being revised in a continuous process (Ness, Tr. 12530), the Board finds it reasonable to defer the administrative act of authentication until later. The authentication of SOP's should take place prior to reactor operation at full power; however, the absence of authentication does not imply that approval has been withheld or that the individual SOP's are defective.

32. Joint Intervenors and Governor Brown argue that emergency planning in the vicinity of Diablo Canyon should include Santa Barbara County, Monterey County and Ventura County. (Joint Intervenors Proposed Findings, pp. 16-17, 20)

33. The borders of Santa Barbara County lie some 18 miles in a southeasterly direction from Diablo Canyon. The County is outside the Federally defined plume emergency pathway zone but within the IPZ. An emergency plan is not required of Santa Barbara County since the State of California has emergency responsibility for the ingestion pathway planning. (Eldridge Testimony ff. Tr. 12688, p. 16; Tr. 12721-723) Santa Barbara County contracted for preparation of a plan since it lies within the BEPZ as defined by the State. The plan is expected to be complete in July 1982. A plan appropriate for the plume emergency pathway zone is not required of Santa Barbara County by Federal standards. (Eldridge, Tr. 12723)

34. Portions of Monterey County and Ventura County are within the Federal and State ingestion pathway EPZ's. The State of California has principal responsibility for emergency planning within these zones. These Counties are, therefore, not required to prepare emergency plans of their own. (Applicant Ex. 73, App. C, p. 25; Eldridge, Tr. 12723; Skidmore, Tr. 11795, 11799)

Emergency Responsibilities of Supporting Organizations

35. Joint Intervenor view the County planning effort as incomplete because various letters of agreement have not yet been signed between the County and supporting organizations. (Joint Intervenor Proposed Findings, pp. 34, 35) No evidence of difficulty obtaining signatures on letters of agreement was brought forward at the hearing. Agreement letters are used for noncritical elements of emergency support. Critical elements are contained in County SOP's. The County is aware of the need for letters of agreement and plans to obtain them. (Ness, Tr. 12458)

36. The Board concludes that the County letters of agreement with supporting organizations are not critical to successful implementation of the emergency plan. They are, nevertheless, important, and as such the Staff should assure itself through consultation with FEMA that the effort to develop significant letters of agreement is concluded promptly.

Availability of Emergency Workers

37. The County has identified 1,173 emergency workers needed to implement the 21 County standard operating procedures which are in the 10-mile EPZ and which have been completed. (Ness, Tr. 12468)

38. Joint Intervenor assert that this planning standard might not be met because emergency workers might elect to assure the safety of their families in an emergency rather than perform their emergency duties. This possibility was termed role conflict by the Joint Intervenor's expert, Dr. Erickson. (Erickson Testimony ff. Tr. 12406, pp. 5-6)

39. Role conflict would not affect the performance of trained professionals such as officers of the California Highway Patrol, the County Sheriff, physicians, nurses and other medical personnel. (*Id.*, p. 7)

40. Role conflict could have an effect on the behavior of some volunteer workers during an emergency. (Mileti, Tr. 12264-265) We understand volunteers to mean general workers whose principal professions are not related primarily to public health and safety such as, for example, private contractors with bulldozers or tow trucks, gas station attendants, banks and others who might play a supporting role but who would not have special emergency training. (Ness, Tr. 12471-473)

41. The Board accepts that role conflict is one of the problems that could arise during an emergency. However, we do not accept that the problem is of such dimension as to render the emergency plan unimplementable.

42. There is no necessary dichotomy respecting roles during an emergency. Supporting workers and trained professionals could verify the safety of their family and then report for duty. (Mileti, Tr. 12264-265)

43. Volunteer workers have noncritical (but useful) functions during an emergency. (Ness, Tr. 12458) Some defections in their ranks would not cause critical damage to plan implementation.

44. Experience from actual emergencies does not indicate that emergency workers fail to perform their duties during an emergency. (Erickson, Tr. 12425; Eldridge, Tr. 12730)

45. Training in emergency response and the nature of the hazards increases the reliability of the emergency workers and enables them to behave reasonably and responsibly in an emergency situation. (Eldridge, Tr. 12729-730) (We understand this to apply to the professional classes of emergency workers since no special emergency training will be given the volunteer workers referred to above.)

46. A scientific sociological survey of emergency workers as advocated by Drs. Erickson and Johnson is not necessary to assure implementability of the emergency plans. Instructions given to emergency workers should address the question of how they will assure family safety in an emergency.

Planning Standard (b)(2): Onsite Emergency Organization

47. Planning Standard (b)(2) states: On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available and the interfaces among various onsite response activities and offsite support and response activities are specified.

48. This planning standard was addressed in the submitted written testimony of Applicant Panel No. 1 Testimony ff. Tr. 11778, pp. 1-3, 1-4 and Mr. Sears of the NRC Staff (Sears Testimony ff. Tr. 12638, p. 7-13). Joint Intervenors and Governor Brown conducted cross-examination but did not submit written testimony.

49. Joint Intervenors state that the Applicant has failed to comply with this planning standard in several ways: (1) Staffing requirements set forth in Table B-1 cannot be evaluated from Sections 5.1.7, 5.2.1 and Table 5.2-1 of the Applicant's emergency plan; (2) Applicant has not prepared for the possibility that operators would leave the site during an emergency to care for their families; and (3) Applicant does not comply with NUREG-0654 requirements to augment staff within 30 minutes during evenings and weekends. (Governor Brown joins in

asserting the deficiency alleged in item 3.) Joint Intervenors' additional assertions concerning NUREG-0737 operating procedures and qualifications status of equipment are treated in our analysis of Planning Standard (b)(9) in this decision.

50. The onshift Diablo Canyon Power Plant personnel assignments and responsibilities are delineated in the Applicant's Emergency Plan. Plant staff emergency assignments are provided for all shifts. (Applicant Ex. 73, §4; Sears Testimony ff. Tr. 12638, pp. 7-8)

51. The Applicant has designated an emergency coordinator who has the authority to direct emergency operations on site. The coordinator has the responsibility and authority to declare emergency action levels and recommend protective actions. (Applicant Panel No. 1 Testimony ff. Tr. 11778, Attach. 6, pp. 5-2, 5-3 and Table 5.2-1)

52. A line of succession for the emergency coordinator position has been established. (*Id.*, p. 5-5)

53. Functional responsibilities for the emergency coordinator have been established. Those actions which cannot be delegated, such as recommendations of protective actions to offsite authorities, have been specified. (*Id.*, Table 5.2-1)

54. Interfaces between onsite functional areas of emergency activity and Applicant's headquarters, local services and State and local governments have been specified and illustrated in a block diagram. (Sears Testimony ff. Tr. 12638, p. 9; Applicant Ex. 73, Figs. 5-2.2, 5-2.3)

55. Applicant's personnel who will augment plant staff in an emergency are specified. (Applicant Ex. 73, App. A, §4)

56. Contractor and private organizations who could provide assistance in an emergency have been specified. (Applicant Ex. 73, App. E; Sears Testimony ff. Tr. 12638; pp. 3, 4, 10)

57. The services that offsite organizations would provide have been specified, agreements reached are appended to the plan and authorities and responsibilities of organizations are specified. (Applicant Ex. 73, App. E; Sears Testimony ff. Tr. 12638, p. 10)

58. The NRC staff has reviewed the Applicant's onsite emergency organization and has concluded that it is in compliance with the requirements of Planning Standard (b)(2). (Sears Testimony ff. Tr. 12638, p. 10)

Requirements of NUREG-0654 Table B-1

59. Governor Brown and Joint Intervenors assert that the Applicant's emergency plan (Section 5) lacks sufficient information to allow evaluation of staffing requirements of Table B-1 of NUREG-0654.

60. The Staff reviewed the Applicant's plan, the implementing procedures, conducted a site visit and concluded that the plan and implementing procedures together contain adequate information to allow an evaluation of the staffing

requirements required for Diablo Canyon. Differences between the plan and Table B-1 are due to different titles of positions used by the Applicant. (Sears, Tr. 12660-662)

61. Joint Intervenors raised the question on cross-examination as to whether Applicant meets shift staffing requirements for licensed operators. (Tr. 11804) Four shifts are required to man the two units at Diablo Canyon around the clock. (Shiffer, Tr. 12773) Four licensed operators which include two senior operators and two licensed operators are required to operate a single unit of the plan at full power. For two-unit operation three senior licensed operators and three licensed operators are required to meet the minimum onshift staffing requirements. (Shiffer, Tr. 11804-805, 11815-816) The Applicant has 31 licensed personnel on site which includes 25 licensed operators and 6 licensed personnel who are not operators. (Shiffer, Tr. 11816) The Board concludes that the Applicant meets the shift manning requirements of Table B-1 of NUREG-0654.

62. Joint Intervenors assert that the Applicant is unable to meet Table B-1 requirements for staff augmentation on evenings or weekends. During a normal work day the Applicant can augment the onshift personnel at Diablo Canyon in approximately 10 minutes. For evenings or weekends it would take from 20 minutes to 45 minutes, possibly extending to one hour, to initially augment its onshift personnel. (Kaefer, Tr. 11827-828) The Applicant's ability to augment the staff with 11 people in 30 minutes as required in Table B-1 of NUREG-0654 is therefore somewhat deficient. The inability to meet this requirement is due to the fact of the remote location of the reactor site. (Sears Testimony ff. Tr. 12638, p. 9).

63. The NRC staff concluded that the Applicant's ability to augment its staff in an emergency is adequate. It based its review on the overall plan, the implementing procedures and site visits. (Sears Testimony ff. Tr. 12638, p. 9; Tr. 12662)

64. We reject Governor Brown's argument that site meteorological conditions and potential doses downwind require exact conformance to the guidance for augmentation in 30 minutes. (Brown Proposed Findings, p. 30) Protection of persons in the plume emergency pathway is to be accomplished by the siren early warning system which does not require staff augmentation to activate. (Applicant Ex. 74, Emergency Procedure G-2)

65. In view of the capabilities of the existing site staff to initiate emergency response, the ability to begin augmentation within 20 minutes and the remoteness of the site, we conclude that the NRC Staff's overall review and conclusion on plant staff augmentation is reasonable.

Role Conflicts Among Plant Workers

66. Joint Intervenors assert that plant workers might encounter the same role conflicts that were alleged for other emergency workers by Drs. Erickson and

Johnson. They base their assertion on their exhibit which reports a rumor of such a possibility at TMI. (Joint Intervenor Ex. 119)

67. Dr. Erickson did not address role conflicts in plant workers directly but did state that role conflicts would not be expected to cause trained professionals to leave their posts. (Erickson Testimony ff. Tr. 12407, p. 7)

68. Mr. Eldridge concluded that emergency training allows people to take reasonable and responsible actions in an emergency. (Eldridge, Tr. 12729-730)

69. There is no necessary dichotomy between seeing to family safety and performing emergency duties. Most people would do both. (Mileti, Tr. 12282)

70. We cannot rule out the possibility that some plant workers would leave their posts or not report for duty in an emergency. Based on the record, however, we conclude that essential plant workers are trained as professionals and have had emergency training and that their expected behavior would, therefore, be similar to other trained professionals described by Dr. Erickson.

71. We conclude that adverse resolution of role conflict could be an action taken by individuals but not by any substantial fraction of the plant staff as a whole in an emergency. Implementation of the site emergency plan would, therefore, not be jeopardized even if one or a few individuals did fail to perform their emergency duties.

72. The Board finds that role conflict should be addressed in instructions to plant emergency workers. The potential for role conflict does not prohibit a finding of adequate Applicant compliance with this standard, however, and the Board concludes that the criteria of NUREG-0654 for implementation of Planning Standard (b)(2) have been met.

Planning Standard (b)(3): Emergency Response Support and Resources

73. Planning Standard (b)(3) states: Arrangements for requesting and effectively using assistance resources have been made, arrangements to accommodate State and local staff at the licensee's near-site Emergency Operations Facility have been made, and other organizations capable of augmenting the planned response have been identified.

74. This planning standard is addressed in the written testimony of Applicant Panel No. 1 Testimony ff. Tr. 11778, pp. 1-5 to 1-6 and the testimony of Mr. Sears of the NRC Staff. (Sears Testimony ff. Tr. 12638, p. 12) Joint Intervenor and Governor Brown cross-examined witnesses but did not submit written testimony.

75. The Applicant has made arrangements for requesting and effectively using assistance resources. (Sears Testimony ff. Tr. 12638, pp. 3, 4, 11; Applicant Panel No. 1 Testimony ff. Tr. 11778, p. 1-6; Applicant Ex. 73, §5)

76. The Applicant has identified organizations capable of augmenting its planned response. (Sears Testimony ff. Tr. 12638, pp. 3, 4, 9-12; Applicant Panel

No. 1 Testimony ff. Tr. 11778, pp. 1-5, 1-6 and Attach. 8; Applicant Ex. 73, §§5, 10 and App. K)

77. The Applicant's site emergency coordinator is authorized to request Federal assistance in the event of an emergency at Diablo Canyon. Although he has this authorization the County of San Luis Obispo would normally initiate such a request through the State Office of Emergency Services. (Applicant Panel No. 1 Testimony ff. Tr. 11778, p. 1-6)

78. The Federal assistance resources that have been identified would be provided by the U.S. Nuclear Regulatory Commission (NRC), the Federal Emergency Management Agency (FEMA), the U.S. Department of Energy (DOE), the U.S. Coast Guard and the Environmental Protection Agency (EPA). (Applicant Ex. 73, §5; Applicant Panel No. 1 Testimony ff. Tr. 11778, p. 1-6) The expected times of arrival of the Federal resources are specified in Applicant Exhibit 73, Section 5. Applicant resources required to support the Federal response are identified in Applicant Exhibit 73, §7.

79. Arrangements to accommodate the State and County emergency response organizations at the emergency response facilities, including the EOF and other accommodations for services such as communications and individual offices, have been made. (Applicant Ex. 73, §§5, 7; Sears Testimony ff. Tr. 12638, p. 12; Applicant Panel No. 1 Testimony ff. Tr. 11778, p. 1-6)

80. Preparations have been made by the Applicant for dispatching a representative to the offsite emergency operations center (EOC). (Sears Testimony ff. Tr. 12638, p. 11; Applicant Ex. 73, Table 5.2-1 and App. A, §4)

81. Several offsite radiological laboratories will be available for assistance in the event of an emergency. These include the Applicant's Department of Engineering Laboratory, California Polytechnic Institute Laboratory, the Applicant's Mobile Environmental Monitoring Laboratory and laboratories at Rockwell International. Capabilities, equipment and response times for these laboratories have been identified. (Applicant Ex. 73, §7; Applicant Panel No. 1 Testimony ff. Tr. 11778, Attach. 8; Sears Testimony ff. Tr. 12638, p. 11)

82. Organizations other than Federal, State and local which can be relied on to assist in an emergency have been identified in the Applicant's Emergency Plan. (Sears Testimony ff. Tr. 12638, p. 12; Applicant Panel No. 1 Testimony ff. Tr. 11778, pp. 1-5, 1-6) A mutual assistance arrangement among California utilities with nuclear power plants has been established to provide emergency response assistance, and other specialized nuclear technology assistance is available through letters of agreement or the response plan. (Applicant Ex. 73, §§5, 10 and App. K; Sears Testimony ff. Tr. 11628, p. 12; Applicant Panel No. 1 Testimony ff. Tr. 11778, pp. 1-5, 1-6)

83. State and County emergency plans contain provisions for incorporating Federal response capability into their plans. (Applicant Panel No. 1 Testimony ff.

Tr. 11778, p. 1-6; Applicant Ex. 73, App. C, §IV.B.2.a.7; Applicant Ex. 80, §§1.7.C and E)

84. Dispatch of State Radiological Health Section personnel to the EOF is described in Annex 2, Volume 1, Section III of the State plan. (Applicant Ex. 82) Sections I.7 and II.3 of the County plan describe assignment of County representatives to the EOF and the support organizations to be called upon.

85. FEMA has reviewed local emergency plans for compliance with the requirements of this standard. It has no recommendations for corrective actions. (Applicant Panel No. 1 Testimony ff. Tr. 11782, pp. 2, 3, Attach. 2; Staff Ex. 35; Eldridge Testimony ff. Tr. 12682, pp. 5-6; Eldridge, Tr. 12704-705, 12708)

86. The Board concludes that the requirements of Planning Standard (b)(3) and the criteria of Part C of NUREG-0654 have been met.

Planning Standard (b)(4): Emergency Classification System

87. Planning Standard (b)(4) states: A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.

88. This standard was addressed at the hearing in the submitted written testimony of Applicant Panel No. 1 and of the NRC Staff. Joint Intervenors and Governor Brown submitted no direct testimony but did conduct cross-examination.

89. The purpose of the emergency classification system is to provide a means of communicating a general assessment of the severity of an accident to offsite response agencies. It also serves as a triggering mechanism for certain actions such as activating the early warning system. (Shiffer, Tr. 11805-806)

90. A standard emergency classification and action level scheme using plant specific system and effluent parameters has been established under the Applicant's emergency plan and implementing procedures. The classes of emergency which have been specified are: (1) notification of unusual event, (2) alert, (3) site area emergency and (4) general emergency. Procedures in the plan specify observable indications and plant instrumentation readings which are the initiating conditions for declaring a particular emergency. (Applicant Ex. 73, §4; Sears Testimony ff. Tr. 12638, p. 13)

91. The plan includes a procedure which lists each of the conditions in Appendix 1 of NUREG-0654 with corresponding indicated conditions for the Diablo Canyon plant. The procedure also lists each of the postulated accident conditions which were analyzed in the FSAR along with other conditions that may result in an emergency and assigns each to a specific classification. The NRC Staff

has evaluated that list and determined that it is consistent with NUREG-0654 Appendix 1. (Sears Testimony ff. Tr. 12638, p. 13)

92. The plan identifies parameter values and equipment status for each emergency class. Each procedure describes systems and diagnostics, automatic actions, immediate operator actions, subsequent operator actions and appendices that give specific instructions for classifying the event. (Sears Testimony ff. Tr. 12638, pp. 13, 14)

93. For all the emergency classification levels the Applicant will notify all of the response agencies including the County, State and NRC. (Shiffer, Tr. 11808) During the August 1981 exercise a delay in ordering sirens to be sounded occurred after the general emergency level was reached. The Board concludes that the delay was attributable to the failure of individuals to act and not to a deficiency in the emergency classification system. (Shiffer, Kaefer, Tr. 11808-811; Sears, Tr. 12644-695)

94. Both the State and County plans have incorporated a coordinated standard emergency classification and action level scheme consistent with the Applicant's. (Applicant Ex. 80, §§I.6.A, I.6.C, I.E.4, II.1, II.3; Applicant Ex. 73, App. C, §III.B)

95. FEMA has reviewed offsite emergency preparations relevant to this standard and has made no recommendations for correction. (Applicant Panel No. 1 Testimony ff. Tr. 11782, p. 3 and Attachs. 2 and 3; Staff Ex. 35; Eldridge Testimony ff. Tr. 12682, pp. 5-6)

96. Battelle Northwest Laboratories conducted an independent review of the Diablo Canyon Emergency Plans. Its report (Staff Ex. 34) noted a number of deficiencies in the plan in relation to Planning Standard (b)(4). The Staff discussed the Battelle report with the Applicant, and the Applicant has changed the procedures related to this standard to agree with all the comments of the Battelle report. The Staff confirmed that the Applicant made these changes. (Sears, Tr. 12666)

97. The Board concludes that the Applicant's Standard Emergency Classification and Action Level System and Procedures conform to the criteria of Part D of NUREG-0654, and Appendix 1, and meet the requirements of Planning Standard (b)(4) of 10 CFR 50.47.

Planning Standard (b)(5): Notification Methods and Procedures

98. Planning Standard (b)(5) states: Procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and followup messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established.

99. This planning standard was addressed in submitted written testimony of Applicant Panel No. 2 and testimony of Mr. Sears of the NRC. Additionally Mr. Jack Eldridge of FEMA and Mr. Tim Ness of the County Planning Office also testified. Joint Intervenor and Governor Brown submitted no written testimony; however, they cross-examined the witnesses extensively.

100. The Licensee has established procedures for notification for State and County response organizations. These procedures are described in the Diablo Canyon Emergency Plan, Sections 5 and 6 (Applicant Ex. 73) and in the Applicant's implementing procedures (Applicant Exs. 75, 75A). Notification of offsite agencies will be made by the Applicant's emergency liaison coordinator who will be appointed by the shift foreman acting as the interim site emergency coordinator in the event of an emergency at the plant. (Sears Testimony ff. Tr. 12638, pp. 13-15; Shiffer, Tr. 11806)

101. Notification of emergency workers will be carried out by methods outlined in the Applicant's Plan Section 5, Procedures G-1 and G-3 of the County Plan and Sections I, II and III of the State Plan Section V.B. (Applicant Exs. 73, 80 and App. B of Applicant Ex. 73)

102. The emergency procedures contain provisions for initial emergency notification messages for the four different classes of emergencies. The messages will contain information about the class of emergency, recommended protective actions, and information about radiation release, if any. Provisions also exist for followup messages from the Applicant to offsite authorities. These provisions require update of the status of the plant about every 15 minutes to each organization. The Applicant will provide supporting information to authorities for messages for the public. These messages will be verified for accuracy through approval by the Applicant's Recovery Manager. (Sears Testimony ff. Tr. 12638, pp. 13-16; Applicant Exs. 73, 74)

103. Procedures for notification of the public within the plume EPZ are included in the County plan. (Applicant Standard Operating Procedures, Exs. 80, 81, 81A)

104. The early warning system (EWS) consists of 83 radio-controlled sirens which have been installed. The purpose of the siren system is to alert the public to turn on radios for emergency instructions. Emergency instructions will come from designated emergency broadcast stations. The early warning system has the capability to notify nearly 100 percent of the population within the State BEPZ within 15 minutes. (Applicant Ex. 73, §7; Sears ff. Tr. 12638, pp. 17-19; Staff Ex. 30; Applicant Panel No. 2 Testimony ff. Tr. 12118, pp. 2-3; Skidmore, Tr. 12124)

105. The sounding of sirens is mandatory at the general emergency level and discretionary at the site area emergency level. (Ness, Tr. 12485)

106. The siren system meets the requirements of NUREG-0654 and follows guidelines of FEMA CPG 1-17 Outdoor Warning Systems Guide. (Applicant Ex. 73, §7)

107. The siren system will be activated by radio from the San Luis Obispo County Sheriff's Office. If the activating system should fail, the siren system could be activated using three backup encoders located at County fire stations. (Applicant Ex. 73, §7)

108. County personnel will notify the emergency broadcast system and will provide instructions for the public. (Applicant Ex. 73, §7; Sears Testimony ff. Tr. 12638, p. 18)

109. Joint Intervenors assert correctly that the siren system has not been tested at full power although it is installed. The Applicant stated that San Luis Obispo County requires that the full-scale siren test be limited to midday during August or September unless otherwise directed by Federal or State authorities. (Applicant Panel No. 2 Testimony ff. Tr. 12118, pp. 2-3) Therefore, although the system stands ready for tests, the Applicant is restrained by local authorities from testing until those times. The Board finds it reasonable to conduct the tests during August or September 1982 according to the preferences of San Luis Obispo County which has responsibility for activating the sirens. (See Finding 107)

110. Joint Intervenors challenge the County communication system to be used for warning County workers of an emergency. They believe that the cascade or sequential warning system to be used is in violation of NUREG-0654, Appendix 3, at 3.7, which states "warning points cannot be encumbered by sequential calldown processes nor can response organizations accept the time lost by such processes. (Joint Intervenors Proposed Finding 4, p. 38)

111. The provisions of NUREG-0654, Appendix 3, pages 3-7, apply to the methods by which organizations are to be notified and not to the means by which individual emergency workers are to be notified. The revised County plan (Applicant Ex. 80, p. II.2(1)) states that County departments, schools, large employers and medical and other institutions will be simultaneously notified by means of a monitor radio with tone alert. Thus principal agencies requiring notification within the County will be notified simultaneously as required by NUREG-0654.

112. NUREG-0654 does not prohibit cascade or sequential warning systems for the notification of individual emergency workers. The County emergency plan includes a cascade plan for telephone notification which will reach into every element of the response organization. The plan generally specifies that organizations upon receiving a notification will in turn notify key personnel using prioritized call lists. (Applicant Ex. 80, p. II.2(1))

113. The County plan for the emergency warning network is given in Attachment 2.2-1 of Applicant Exhibit 80. Examination of these alerting diagrams reveals that there is some sequential organization to organization notification. For example, sheet 1 of Attachment 2.2-1 indicates that the Sheriff's Office, upon receiving an emergency notice at the alert level or greater, has seven offices to notify in addition to the Sheriff himself. The attachment further shows that this notification may take place either by telephone or by radio; however, telephone is

the primary means of communication. Therefore Joint Intervenors are correct in asserting that at least some sequential notification does take place from the Sheriff's Office, which is the initial offsite warning point. The stated purpose of the NUREG requirement is to prevent loss of time that would be involved both for the reporting office and for the receiving office if sequential calling is used. The diagrams of the County plan, however indicate that consideration has been given to restricting the number of sequences required for any one warning point. Our examination of the alerting diagrams does not reveal excessive warning responsibilities on any second level warning point listed. We do not think that it would take an excessively long time, for example, for the Sheriff's Office to notify seven other offices even if it were done sequentially. (Applicant Ex. 80, Attach. 2.2-1)

114. The Board concludes that principal offices within the County will be notified by simultaneous notification methods, that redundant notification methods consisting of both radio and telephone exist throughout the County warning system and sequential call-down methods which are used are reasonable and not in conflict with the intent of NUREG-0654.

115. The County plan provides for notification of those in the population who may not be adequately warned by the siren system. People in parks and on beaches will be notified by mobile public address and hand-held public address units. These notifications will be carried out by the State's Department of Parks and Recreation, the County Sheriff's office and the city police. Isolated rural population and transients outside of siren range will be notified by vehicles carrying mobile public address systems. Helicopters carrying loudspeakers will be utilized. Ships at sea will be notified by marine radio and by direct interception by the U.S. Coast Guard. Institutions including schools, hospitals, convalescent hospitals, residential care facilities and large employers will notify their populations using their internal plan which will be activated by instructions from a tone alert radio system. Deaf persons and those homebound and living alone will be warned by phone calls, teletype service or police patrol car visits as appropriate. Need for special notification will be based on lists established at local police and fire stations. If notification is needed in the State extended EPZ it will be made by police and fire vehicles conducting a mobile public address alert. (Applicant Ex. 80, §II.5)

116. Joint Intervenors assert that the early warning system (EWS) sirens should be sounded in the event of an alert or site area emergency rather than reserving its mandatory use exclusively to a general emergency. (Joint Intervenors Proposed Findings, p. 39)

117. Governor Brown also asserts that the sirens should be sounded at lesser levels of emergency than the general emergency. He argues that with an effective public information system there would be no reason to believe that early sounding of the sirens could do anything but enhance the safety of the public in the event of an emergency. This is because the public could receive early notice of the possible

later need to take protective actions. The public, with earlier warning, could make preliminary arrangements to gather their families and supplies in the event of a later evacuation. Evacuation would be aided because the public, having already received notification, would be ready to act promptly. This is important because evacuation is preferred over protective sheltering, which reduces doses to the public by only 10 percent. (Brown Proposed Findings, pp. 45, 46)

118. When the public notification system is viewed as a whole it is evident that there are a variety of primary and backup means of notifying the public. (Shiffer, Tr. 11809) At levels of emergency less than a general emergency, the public will be kept informed through normally scheduled radio and television broadcasts. (Shiffer, Tr. 11872; Skidmore, Tr. 12137; Baxter, Tr. 12138)

119. Under these circumstances the Board finds it reasonable that a particular signal, *i.e.*, the siren, be reserved for conditions under which prompt action is needed by the public. Mandatory use of the siren for less serious incidents would dilute the effectiveness of the signal even with an effective broadcast system since lesser emergencies could either get worse or better with the passage of time. (Ness, Tr. 12487-490)

120. We conclude that the provision for mandatory sounding of the early warning system at the general emergency level and discretionary sounding at the site area emergency stage is reasonable and that protection of the public health and safety would not be improved by mandatory sounding of the sirens at lower levels of emergency.

121. Joint Intervenors assert that reliance on the telephone as a backup notification system to the EWS sirens provides inadequate assurance of safety because the phone system is insufficiently reliable and its capability to support the number of calls reasonably anticipated during emergencies has not been studied or demonstrated. (Joint Intervenors Proposed Findings, p. 39)

122. Joint Intervenors submitted Exhibit 126, which consists of a memorandum for the record written by a Mr. Jack Eldridge of FEMA, as evidence concerning the reliability of the County phone system.

123. Having examined Joint Intervenors' Exhibit 126 the Board concludes that the evidence contained therein concerning a faulty telephone system in San Luis Obispo County is unconvincing. The memorandum establishes only that a single person in the San Luis Obispo County Fire Department thinks the telephone system is inadequate.

124. Cross-examination by Joint Intervenors of Messrs. Eldridge and Ness established only that neither was aware of any studies done on the adequacy of the phone system during emergencies. (Eldridge, Tr. 12718, Ness, Tr. 12494)

125. The Board finds that there is no body of evidence to support the assertion that San Luis Obispo County telephone system is, as a whole, unreliable for emergency use.

126. The concern expressed about the telephone being used as a backup notification system to the early warning siren system is not supported in the record. (Joint Intervenor's Proposed Finding 11, p. 39) The County has backup communication systems to be used if some persons cannot be reached by phone. (Ness, Tr. 12494) However, no reference to using telephones as a backup to the EWS is made.

127. FEMA's findings on emergency planning identified several areas of deficiency regarding this standard. Corrective actions are needed (1) to provide technical specifications for design and maintenance of the EWS, (2) to establish radio and phone links among the EOC and the emergency broadcast stations and the County on giving emergency instructions to the public, (3) for completion and operability of the EWS/EBS and (4) for provision of pagers to key County personnel. (Applicant Panel No. 1 Testimony ff. Tr. 11778, Attach 2, p. 4)

128. The County and the Applicant are addressing these needed actions according to a schedule submitted by FEMA Region IX to FEMA Headquarters. Technical specifications are now developed for the EWS. Pagers are on order and will be provided. (Nevolo Tr. 12057) Commitments to obtain agreements and communication equipment have been made. The EWS System has been installed and will be tested in the summer of 1982. Completion of these items will be assured by FEMA and NRC Staffs prior to full power operation at Diablo Canyon. (Eldridge Testimony ff. Tr. 12682, pp. 7-9)

129. The Board concludes that it has reasonable assurance that the deficiencies noted by FEMA on this planning standard are corrected or will be corrected promptly. The Staff should verify completion prior to issuing an operating license.

130. The Board concludes that the early warning siren system, together with supplementary methods of notification, will provide essentially complete notification of the general public in the event of an emergency at Diablo Canyon. We therefore conclude that the offsite emergency plans and the Applicant's emergency plans meet the requirement of 10 CFR 50.47(b)(5) and the criteria of Part E of NUREG-0654.

Planning Standard (b)(6): Emergency Communications

131. Planning Standard (b)(6) states: Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.

132. Written testimony on this planning standard was submitted by Applicant Panel No. 3 Testimony ff. Tr. 12052 and by the NRC Staff. (Sears Testimony ff. Tr. 12638) Joint Intervenor's and Governor Brown did not submit written testimony; however, they conducted extensive cross-examination of the Staff's and Applicant's witnesses. Additional testimony on this standard was provided by Mr.

MacElvaine of the San Luis Obispo County Board of Supervisors, Mr. Eldridge of FEMA, and Mr. Ness of the San Luis Obispo County Planning staff.

133. The Applicant has submitted plans which provide for prompt communication capability between the Applicant, the County, the State and the NRC. (Applicant Ex. 73, §7)

134. Communications capability for public notification are described in the County plan. (Applicant Ex. 80, §3; County Standard Operating Procedures, Applicant Exs. 81 and 81A)

135. The Applicant's communication system includes both primary and back-up means of communication with its emergency response organization. Components of the Diablo Canyon communication system consist of private dial systems using two separate microwave systems; a computerized branch exchange for both internal use and access to Pacific telephone; Internal Private Automatic Branch Exchange; dedicated special purpose Pacific telephone system; dedicated circuits for the data communications system; dedicated circuits for NRC communications; a UHF radio system and VHF radio system. (Sears Testimony ff. Tr. 12638, p. 19)

136. Dedicated phone links exist between the power plant, the County Sheriff Watch Commander's Office, County EOC, State Office of Emergency Services and the NRC. (Applicant Ex. 73, §7; Applicant Panel No. 3 Testimony ff. Tr. 12052, p. 3-2)

137. Redundant communications links exist between the power plant site and the San Luis Obispo County Sheriff's Office. These consist of UHF radio and a dedicated automatic telephone tie line. Further redundant communication links exist between the power plant and the EOC and the California Office of Emergency Services. (Applicant Panel No. 3 Testimony ff. Tr. 12052, p. 3-3)

138. An automatic telephone system is on order which will expand the dedicated system between the plant and the TSC, the California Office of Emergency Services, the County EOC and the NRC Office at the County EOC. (*Id.*)

139. The Applicant can notify its response organization through a number of communication links. These include telephone beepers and radios. Key corporate personnel can also be reached through special dedicated phones installed in residences. (Applicant Ex. 73, §7; Applicant Panel No. 3 Testimony ff. Tr. 12052, p. 3-2)

140. Principal offsite response organizations will man their communication links on a 24-hour per day basis. Communication links in the TSC and the EOF will be manned 24 hours a day when the centers are activated. (Sears Testimony ff. Tr. 12638, p. 20)

141. Radiological monitoring teams will have radio-equipped vehicles and portable radio sets for communication from the field. Fixed medical support facilities will communicate via the telephone system and mobile facilities will communicate via radio systems. (Sears Testimony ff. Tr. 12638, p. 20)

142. State and County response organizations have redundant means of communication which include telephones, radio channels and dedicated telephone lines. The plan calls for principal reliance on the telephone with radio-activated pagers for key personnel serving as backup. The telephone lines with radio-activated tone alert monitors as backup will provide communication with County agencies, schools and other large institutions. (Applicant Ex. 81, §III.01; Skidmore, Tr. 12131; Nevolo, Tr. 12057)

143. Much of the communications equipment needed to make the communication system operable had not been installed at the time of the hearing. According to Mr. Nevolo the necessary equipment is on order and is expected to be in place by May 20, 1982. The needed equipment includes: radio equipment required to activate the EWS; radio transmitters for the EBS; additional telephone lines for the County EOC; radio transmitters for the City of Morro Bay, San Luis Obispo and Pismo Beach Fire Departments to provide backup capability for activating the siren system; portable 2-way radios to provide mobile radiation monitoring teams with direct communication with the Unified Dose Assessment Center (UDAC); and a radio repeater to be installed at Davis Peak to provide complete radio coverage. (Eldridge Testimony ff. Tr. 12688, pp. 8-13; Ness, Tr. 12556-557; Nevolo, Tr. 12061-063; Applicant Panel No. 3 Testimony ff. Tr. 12052, 3-3, 3-4 and Attach. 4)

144. Governor Brown and Joint Intervenors find the San Luis Obispo County communications network inadequate for implementation of the emergency response plan. (Governor Brown Findings, pp. 22-29; Joint Intervenors Findings, pp. 40-43) Both parties' objections are based on Governor Brown's Exhibits 9 and 10 which detail deficiencies in the County radiocommunications network. (Governor Brown Exs. 9, 10)

145. Governor Brown's Exhibit 9 is a report entitled "An Evaluation of the San Luis Obispo County Public Safety Communication System" prepared by T. R. C. Voorhees for San Luis Obispo County. This report lists communication deficiencies in San Luis Obispo County and assigns priorities to them. Priority 1 deficiencies are those recommended by FEMA for correction.

146. Priority 2 actions are recommended by Voorhees as the necessary consequence of the emergency response plan being developed. No single improvement under Priority 2 is essential, although many of the recommended improvements would enhance the performance of the County emergency organization in implementing the emergency response plan. Priority 3 and 4 items are those required for overall communications improvement but not linked directly to Diablo Canyon. (Governor Brown Ex. 9, p. 2)

147. The Board finds that significant Priority 2 recommendations have been or will be carried out. These include: (1) supplying tone alert monitor radio receivers to County agencies and institutions as an alternative to the telephone (Applicant Ex. 81, §III.01; Skidmore, Tr. 12131, (2) the addition of a repeater station on

Davis Peak (Eldridge Testimony ff. Tr. 12688, p. 10) and (3) additional radio paging capabilities for direction and control personnel and key technical staff. (Nevolo, Tr. 12057)

148. Governor Brown's Exhibit 10 is a report by the Department of Technical Services, County of San Luis Obispo, entitled "Five Year Communications Plan" dated January 1982. This report contains a description of the County communication system and tabulates a number of deficiencies which need correction over the next five years to keep the system viable. (Brown Ex. 10, General Executive Summary)

149. Neither Staff nor Applicant presented any evidence to contradict the existence of the deficiencies tabulated. The Board accepts the statement of actions needed to upgrade the County communications system as accurate. The report is critical of the Sheriff's microwave system which is used to send messages to mountaintop stations which in turn rebroadcast the messages. This is done because mountainous terrain inhibits direct radio communication. Proper functioning of the microwave system is important to communications in San Luis Obispo County. (Brown Ex. 10)

150. Disaster control activity of the County does not depend with equal criticality on all of the components of the local government communications system. One channel of the many available for communications in the County has been designated to support principal disaster control activities. This channel is termed the local government VHF (green) channel. (Brown Exs. 9, 10; Tr. 12556)

151. The local government VHF (green) channel will be used for siren system activation and for backup siren activation. It will also be used to activate the emergency pager system which will be installed in hospitals, schools and other institutions. (Brown Ex. 10, p. 22)

152. The local government VHF system (green channel) is activated by the local government radio system. It is uncertain whether this channel is dependent on the microwave system since Brown's Exhibits 9 and 10 show some conflict on this point. Problems with the Sheriff's microwave system which are identified in Brown's Exhibit 10 therefore might not apply to this channel although we cannot resolve the question from the testimony and exhibits. (Brown Exs. 9, p. 4 and 10, p. 22)

153. Although numerous deficiencies were noted elsewhere in the communications system, the technical report states that the Applicant has agreed to purchase a new system of radio transmitters to replace the older tube-type equipment which is now in place. "This new radio system will bring the local government VHF system to an excellent condition and it should be able to handle the communications needs of this channel for many years." (Brown Ex. 10, p. 22)

154. There also exists a UHF local government radio system which in its present configuration does not give adequate coverage in the northern and southern ends of the County. It is also of limited usefulness in its present configuration along

the coast (Avila Beach and the South County). This channel would be used by UDAC to communicate with health physics teams in the field. (Brown Ex. 10, p. 19; Ness, Tr. 12557)

155. Improved UHF coverage, particularly in the southeast sector of the County, could be obtained by the addition of a repeater station either at Davis Peak or Point Sal. The Applicant will install a transmitter at Davis Peak. (Eldridge Testimony ff. Tr. 12688, p. 10; Ness, Tr. 12558)

156. The UHF channel which would be used for communication by field teams is dependent upon the Sheriff's microwave system. Thus it is vulnerable to failure if the microwave system fails. (Brown Ex. 10, p. 19)

157. The County has not had a major failure of the microwave equipment since it was installed in 1974. The technical analysis concludes that the microwave equipment is now over seven years old and that eventually a major failure will occur. It appears also to suffer from design defects and maintenance problems. (Brown Ex. 10, pp. 4-7)

158. The Board concludes, after consideration of both Brown's Exhibits 9 and 10, that while the County communications system as a whole may have deficiencies requiring a systematic upgrade over a period of several years the Applicant and the County have taken steps to ensure that the specific channel needed for an emergency at Diablo Canyon has been or will be upgraded. The equipment needed has been ordered and should be in place by May 20, 1982.

159. The Board concludes that the radio communication required in a nuclear emergency would be performed on the County (green) VHF channel or the UHF channel which, according to the technical analysis, is or will be in good condition.

160. The Board concludes that there is reasonable assurance that the critical functions of communication could be performed using the green channel and the UHF channel in an emergency at Diablo Canyon and that the County plan is in compliance with 10 CFR 50.47(b)(6). The Staff should assure itself of the continuing reliability of communication which is dependent on the Sheriff's microwave system, since it appears that this system could be a weak link in County emergency communication.

Planning Standard (b)(7): Public Education and Information

161. Planning Standard (b)(7) states: Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established.

162. This planning standard was addressed in the written testimony of Applicant Panel No. 2 and testimony of the Staff given by Mr. Sears. Sociological testimony was presented by Dr. Dennis Mileti for the Applicant. Joint Intervenors offered the sociological testimony of Drs. Kai T. Erickson and James H. Johnson, Jr.³⁰ Governor Brown offered no direct evidence but conducted cross-examination of witnesses.

163. The Applicant has developed a public education program. This program includes periodic dissemination of a newsletter which informs the public as to how they will be notified and what their initial actions should be in the event of a radiological emergency. The newsletters contain information about the plant, general nuclear issues, emergency planning, radiation, the EWS and a glossary of nuclear terms. The newsletters have been sent to residents in the State BEPZ. (Applicant Panel No. 2 Testimony ff. Tr. 12118, pp. 24-26 and Attachs.)

164. Emergency information has been included in the San Luis Obispo County telephone book for 1981. The page includes instructions on what to do if the emergency sirens should be sounded. It names the emergency broadcast system stations which should be listened to in event of an emergency. It advises on emergency actions and lists sources of additional information. A map of the Diablo Canyon area showing major highways is included. (Applicant Panel No. 2 Testimony ff. Tr. 12118, Attach. 12)

165. Additional plans call for the publication by the County of a booklet containing emergency instructions for distribution throughout the plume exposure pathway EPZ. The booklet is still in preparation. Plans also call for the placing of cards in motel rooms and public gathering places which will give emergency instructions. Drafts of this material have been reviewed by the NRC Staff. (Sears Testimony ff. Tr. 12638, p. 22; Applicant Panel No. 2 Testimony ff. Tr. 12118, p. 2-6; MacElvaine, Tr. 12250-251)

166. Joint Intervenors object that the Applicant's January 1982 Diablo Canyon Newsletter erroneously suggests that the public will be notified at the alert stage, when in fact the existing classification system does not make notification through the use of sirens mandatory until the general emergency stage. (Joint Intervenors Proposed Finding 4, p. 44)

167. The Board has reviewed the January newsletter and finds its instructions on this matter are ambiguous. The text of pages 2 and 3 of the newsletter could be read as informing the public that the sirens would be sounded in the event of an emergency. The text does not make clear that the sirens would be used only in the

³⁰ Dr. Mileti is Associate Professor, Department of Sociology, University of Colorado. He has written extensively on human behavior and response to disaster.

Dr. Erickson is Professor of Sociology, Yale University and Editor of the Yale Review. He has written extensively on human behavior and response to disaster.

Dr. Johnson is Assistant Professor of Geography, UCLA, who specializes in urban-social geography. He has written extensively in his field and is co-author of a sociological survey of TMI area residents.

event of a general emergency. Subsequent newsletters should make clear precisely when the sirens would be sounded. (Applicant Panel No. 2 Testimony ff. Tr. 12118, Attach. 11)

168. Two locations have been established for members of the news media in San Luis Obispo. In the first few hours of an incident at Diablo Canyon, news media facilities will be located at the San Luis Obispo County Sheriff's Office. If an incident should continue past four hours, a news media facility will be opened at the old Cuesta College Auditorium. Specific directions for reaching these centers have been provided. (Applicant Panel No. 2 Testimony ff. Tr. 12118, Attach. 13)

169. News releases to the public will be prepared by the plant staff and approved by the public information recovery manager. He will notify the public information representative of the County emergency organization of the news release and its content and coordinate a joint briefing. (Sears Testimony ff. Tr. 12638, p. 23)

170. A rumor control center has been established by San Luis Obispo County. (Applicant Ex. 80, §§II.6 and III.08)

171. Joint Intervenors argue that the Applicant's public education program is not in compliance with FEMA Guidance Memorandum No. 19, which they introduced into evidence as Exhibit 121. This exhibit contains draft guidance by FEMA for actions required to qualify public information and education plans against NUREG-0654. It has not been approved by FEMA Headquarters. The guidance suggests that the Applicant should conduct personal visits to the key media to conduct briefings on the emergency plan. The objective is to reach media management rather than individual reporters with these plans. The guidance suggests that FEMA and local government personnel should be participants in these briefings. (Joint Intervenors Ex. 121)

172. Mr. Baxter testified for the Applicant that although they have conducted such briefings they were not accompanied by FEMA and local government personnel. (Baxter, Tr. 12144) We are not aided by the record as to why this omission is important to the overall status of public information planning for Diablo Canyon, and we consider it insignificant.

173. Joint Intervenors assert that neither the State of California nor San Luis Obispo County has implemented a public education program, and the public understanding of essential emergency response information is virtually nonexistent. The public information booklet has not yet been published. The testimony supports a conclusion that public understanding of emergency response is low. (Ness, Tr. 12566; MacElvaine, Tr. 12249-252; Eldridge, Tr. 12718-719)

174. FEMA has found that the public information program required under this planning objective must be completed to be sure that emergency response instructions are made available to both resident and transient populations. (Applicant Panel No. 2 Testimony, Attach. 2; Applicant Panel No. 1 Testimony ff. Tr. 11782, p. 4) FEMA anticipates that this program will be completed by June 20, 1982. (Eldridge Testimony ff. Tr. 12688, p. 11; Applicant Panel No. 1 Testimony ff. Tr.

11782, Attach. 4) The County information document has been prepared in draft form but has not gone into final printing because the County Board of Supervisors has not given its final approval to the County plan. (MacElvaine, Tr. 12251)

175. The Board concludes that the public information pamphlet being prepared by the County is important to the education of the County's citizens. This pamphlet should be available to the public well in advance of start-up of the Diablo Canyon plant because public understanding of emergency response is low. The Staff should assure itself that this document is published and disseminated promptly.

176. Joint Intervenors raised the issue of whether planners had enough information about public behavior and attitudes to design an effective emergency information and warning system. They believe that a social and psychological survey of local residents would be valuable in devising a public information program. (Joint Intervenors Proposed Findings 28-32)

177. The Applicant's witness, Dr. Mileti, stated that sufficient research has been done by behavioral and social scientists on public response to disaster to permit the design of a warning system for radiological emergencies. It is known, for example, that notification and instructions work best if they come from credible sources; if they are frequent and consistent with each other; and if they are specific about what the public should do, when to do it and precisely who should do it. Specific local information that might be obtained from a survey of the population is not necessary to improve the plan. (Mileti Testimony ff. Tr. 12118, pp. 2-10, 11; Tr. 12161-162)

178. The County plan provides for families to evacuate as a unit. Traffic will be controlled by police and routing advice will be given; however, evacuation routes are not mandatory. Congregate care centers are provided; however, destinations are left to the choice of those evacuating. School children will be evacuated by bus. The plan does not prohibit parents from picking up children at school. However, assurance of safety of children would permit many parents to evacuate without them. (Applicant Ex. 80, p. 1.6 (13, 14); Mileti, Tr. 12267)

179. Joint Intervenors' witnesses, Drs. Erickson and Johnson, differ from Dr. Mileti on the basis of their assessment of the adequacy of the information drawn from past studies. In their view such information is not adequate to design an emergency plan and they would require that a local survey of populations be conducted to develop the specific information needed to develop a plan for a local population. (Erickson/Johnson Testimony ff. Tr. 12407)

180. In Dr. Erickson's view a radiological emergency differs from other emergencies such as floods, storms and earthquakes in that the population cannot determine when the event is over. The cause for alarm never quite disappears. People are never sure if they have been contaminated and may as a result have a deep and lasting form of anxiety. People might evacuate before being advised to and then might move longer distances than advised. At the same time other

portions of the population may underreact or become immobilized. These phenomena, in Dr. Erickson's view, become sharply defined when radiation is involved because people do not know what the dangerous substance looks like or feels like or how far it can reach into the countryside. (Erickson Testimony ff. Tr. 12407, pp. 4, 5)

181. Dr. Erickson advocates a sociological survey on the attitudes and outlooks of the people who are expected to evacuate in the event of a crisis or who are expected to aid in the evacuation effort itself. The information gained would be used as an aid in designing public information programs. He lists a number of concerns in this regard: whether emergency workers can be counted on to report for duty; whether parents of school age children will be willing to evacuate without first hand reassurances that their offspring are being safely conveyed out of the area; whether or not the local residents are willing to believe the warnings that they receive or will follow the directives given them by local officials; and whether vehicular traffic will drain out of the danger zone in preferred evacuation directions. (Erickson Testimony ff. Tr. 12407, pp. 9-11)

182. Dr. Johnson's research shows that at TMI the order to evacuate caused departure from a larger area than was originally intended by authorities. Evacuees fled a median distance of 85 miles and showed directional preferences. Few people used the evacuation shelter which was provided and most stayed with friends or relatives. The significance of these factors, in Dr. Johnson's view, is that the behavior of populations during an evacuation is unpredictable. Evacuation times which have been estimated for San Luis Obispo County might not be accurate. Dr. Johnson recommends a detailed sociological survey to reveal the attitudes of the local population regarding the kind of information which may influence evacuation decision making. (Johnson Testimony ff. Tr. 12407, pp. 2-5)

183. Dr. Mileti did not dispute the facts stated by Intervenor's witnesses. His view was essentially that since these facts are known they can be and have been factored into the plan. There would be little additional benefit to be derived from quantification of factors which are already known to be significant. (Mileti, Tr. 12162; Tr. 12176-179)

184. Dr. Mileti agreed that underreaction of the public is possible. (Mileti, Tr. 12170) Repeated consistent warnings are an aid to preventing underreaction. (Mileti, Tr. 12179)

185. The data presented by Dr. Johnson are credible research results, and we have no trouble accepting them. We have more trouble, however, in assigning significance. The fact that populations evacuated from TMI in larger numbers than expected or went further than expected or failed to use public shelter areas has no apparent bearing on public health and safety. We are unable to ascertain that the proposed sociological survey could be used to enhance the effectiveness of public notification or education in the Diablo Canyon area since over-response, although unnecessary, appears harmless to public health and safety and the data that would

be collected in a survey would be of limited relevance to a public information program. (Johnson Testimony ff. Tr. 12407, p. 6; Tr. 12419-420)

186. We have further doubts about the accuracy of the proposed surveys. People's statements about their likely behavior under stress conditions while being interviewed under unstressed conditions appears unreliable. Dr. Mileti testified at length about the difference between people's stated response and their actual response in various situations. (Mileti, Tr. 12162-165) Dr. Erickson, when questioned on this subject, replied in essence that some information is better than none. (Erickson, Tr. 12425) We find this unconvincing. We are not faced with a situation in which we have no information.

187. We find unconvincing the proposition that radiological emergencies or disasters differ substantially from other forms of disaster for the purpose of immediate evacuation. Many of Intervenor's examples designed to establish this proposition pertain to the aftermath of disaster. (Johnson, Tr. 12411) This planning standard, however, addresses the immediate actions needed in the event of a radiological disaster. In such a disaster the public must either take shelter or evacuate. We do not see why the public's behavior during an evacuation would be dependent on the nature of the hazard. It is more credible that a fearful public fleeing before the hazard of hurricane, chemical spill or of radiological release would behave similarly. (Mileti, Tr. 12228-233, 12770-275) They would flee. (Johnson, Tr. 12412-413) This is precisely the action the plan prescribes.

188. Having taken the testimony of Drs. Mileti, Erickson and Johnson fully into account, the Board concludes that sociological information relevant to designing a public information system is reasonably reliable and has been taken into account in the San Luis Obispo County Emergency Plan. (Mileti, Tr. 12152-154) These factors include the general fearfulness of populations with regard to radiation, parental concerns for children (Mileti, Tr. 12267), the need for repeated warnings, the need for credible sources of information, the need for accurate information, and the need for confirmation. Quantification of public attitudes towards these factors, while interesting, would not add substantially to the effectiveness of the plan. We conclude, therefore, that the existing public information program when implemented, will provide reasonable assurance that the public can be notified effectively in the event of a radiological accident and that no public surveys are required.

Planning Standard (b)(8): Emergency Facilities and Equipment

189. Planning Standard (b)(8) states: Adequate emergency facilities and equipment to support the emergency response are provided and maintained.

190. This planning standard is addressed in the submitted written testimony of Applicant Panel No. 5 and of NRC Staff Witness Mr. John R. Sears. (Applicant Panel No. 5 Testimony ff. Tr. 11924; Sears Testimony ff. Tr. 12638, pp. 27-29)

Neither Joint Intervenors nor Governor Brown submitted written testimony on this standard. Both, however, conducted cross-examination of Applicant and Staff witnesses.

191. The Board has examined the evidence on this planning standard and finds the evidence to be as stated in the Staff's Proposed Findings of Fact which the Board adopts and reproduces below in Findings 192 through 197.

192. A TSC, OSC (onsite) and an EOF (offsite) have been established by Applicant to support an emergency response. (Sears Testimony ff. Tr. 12638, p. 24; Applicant Ex. 73, §7; Applicant Ex. 74A; Applicant Panel No. 4 Testimony ff. Tr. 11903, pp. 4-2, 4-3)

193. Onsite monitoring systems for use in initiating emergency measures, provisions for acquiring data from offsite monitoring analysis equipment, and offsite radiological monitoring equipment in the vicinity of the plant have been established by the Applicant. (Sears Testimony ff. Tr. 12638, pp. 24, 25; Applicant Ex. 73, §7; Applicant Ex. 74A)

194. Provisions have been made for protective equipment communications equipment, radiological monitoring equipment and emergency supplies. (*Id.*; Sears Testimony ff. Tr. 12638, pp. 26, 27; Applicant Ex. 73, §§7, 8; Keyworth, Tr. 11911-912, 11916-917; Shiffer, Tr. 11906)

195. Meteorological instrumentation and procedures have been provided by the Applicant. (Applicant Ex. 73, §7; Sears Testimony ff. Tr. 12638, p. 26)

196. Means for maintaining the emergency equipment have been established. (Sears Testimony ff. Tr. 12638, p. 27; Applicant Ex. 73, §8)

197. A central location for the receipt and analysis of field monitoring data and coordination of sample media has been established by the Applicant. (Sears Testimony ff. Tr. 12638, p. 26; Applicant Panel No. 4 Testimony ff. Tr. 11903, p. 4-3; Applicant Ex. 73, §7; Keyworth, Tr. 11911-912, Tr. 11914-915)

198. Joint Intervenors assert correctly that the interim EOF, including the UDAC, is housed in a trailer and the permanent facility is not projected for completion until 1983. Their objection to this is a general assertion that the functions of these facilities cannot be relied upon during adverse environmental conditions. The record contains no evidence as to why the interim facility is inadequate. (Joint Intervenors Proposed Findings, p. 45)

199. Joint Intervenors assert that the OSC is the largest primary assembly area for onsite personnel in the event of an emergency and that it may accommodate approximately 200 people. They object that only two emergency kits are stored in the OSC, which they say is in violation of NUREG-0654 requirements that specific equipment be stored there including respiratory equipment, protective clothing, portable lighting, monitoring equipment, cameras and communication equipment. (Joint Intervenors Proposed Findings, p. 45)

200. The OSC is located in the Security Building on site. It is to be used as a staging site for logistical support activities. It has no special provisions for

minimizing radiation exposure. Personnel who assemble there would be evacuated if the security building became uninhabitable. (Applicant Ex. 73, p. 7-8)

201. Radiological emergency kits are provided at several locations on site and off site to supplement the large amount of radiation protection equipment which is provided for routine use at the plant. Personnel engaged in recovery actions would utilize the normal plant protective equipment, since it is available in greater quantity and variety than that in the emergency kits. The plan does not anticipate that the personnel who assemble in the OSC would be outfitted with protective equipment from there. (Applicant Ex. 73, p. 7-36)

202. Evacuation kits are supplied in the OSC for the purpose of providing the equipment necessary to determine the radiation exposure received by evacuees and to survey the evacuees and their vehicles. Two such kits will be available at the OSC for use of the evacuation team. The Board concludes that this is adequate for the purpose described. (Applicant Ex. 73, p. 7-37)

203. The plant has available approximately 250 full-face masks with filters. It also has available approximately 100 MSA Model 401 self-contained breathing apparatus units. The plant has a service air system that can be used to supply breathing air. (Applicant Ex. 73, p. 7) The plant is stocked with enough protective clothing to supply approximately 350 people. (Applicant Ex. 73, p. 7-50)

204. The two radiological emergency kits stored at the OSC contain portable lighting and monitoring equipment, additional protective clothing and additional respiratory equipment. We find that two such kits are reasonable considering the large stocks of these items available throughout the plant, which would be the primary source in the event of an emergency. The Board concludes that the OSC is adequately stocked with equipment for the purpose intended.

205. Joint Intervenors assert that neither the State nor the County has independent radiation monitors onsite. This necessitates total reliance on the Applicant to monitor and report onsite radiation releases and to provide prompt notification of an emergency at the plant. (Joint Intervenors Proposed Findings, p. 45) The Board finds the assertion to be correct but of no significance. The Applicant is responsible for radiation monitoring onsite. There are no regulatory requirements for State or County monitoring on site. (10 CFR 50.47; NUREG-0654, Part H)

206. Joint Intervenors assert that during the August 19th exercise information was not distributed promptly from the EARS system in the EOF to UDAC. (Joint Intervenors Proposed Findings, p. 47) We find that some delays did occur in transferring hard copies of information to UDAC during the exercise. However, plans call for expanding the system of terminals in UDAC which would allow them to get plant data directly and to bypass the EARS system entirely. The additional equipment is on order and was expected to have been installed by May 1, 1982. (Keyworth, Tr. 11915, 916)

207. Joint Intervenors assert that not all equipment necessary to respond to a radiological emergency is currently in place, including UDAC equipment and

radio communications equipment for health department vehicles. Mr. Eldridge testified that radio equipment will be available by May 20, 1982. (Eldridge Testimony ff. Tr. 12688, p. 10)

208. Joint Intervenors assert that the EOF, TSC and OSC do not now comply with the requirements of NUREG-0696, NUREG-0654 and 10 CFR 50.47(b)(8). These assertions are based on the report of Battelle Pacific Northwest Laboratories on the Applicant's Emergency Plan. (Staff Ex. 34) Mr. Sears testified that the deficiencies noted by Battelle have been discussed with the Applicant and the Applicant has agreed to modify the emergency plan to take account of the comments. (Sears, Tr. 12666)

209. FEMA has reviewed this planning standard and has identified the following corrective actions as being necessary: (1) additional telephone capability for operations in the EOC should be established and lines should be installed; (2) the EOC should have a backup power source to ensure continuing operations under conditions of commercial power failure; and (3) the County should develop and install a system that will allow the cities in the plume exposure pathway zone to be kept informed of the developing situation from the EOC. (Eldridge Testimony ff. Tr. 12688, pp. 11-13)

210. FEMA has obtained satisfactory resolution of these items with the County and Applicant, and FEMA will verify that these corrective actions have been taken when they are completed. All equipment will be installed by May 20, 1982. (Eldridge Testimony ff. Tr. 12688, pp. 11-13; Applicant Panel No. 1 Testimony ff. Tr. 11778, Attach. 4)

211. The Board concludes that the issues raised by Joint Intervenors on Planning Standard (b)(8) have been resolved and that there exists reasonable assurance that adequate emergency facilities and equipment to support an emergency response have been or will be provided and maintained. We conclude that the Applicant and San Luis Obispo County are in compliance with the requirements of 10 CFR 50.47(b)(8) and Part H of NUREG-0654.

Planning Standard (b)(9): Accident Assessment

212. Planning Standard (b)(9) states: Adequate methods, systems and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.

213. This standard is addressed in the written testimony of Applicant Panel No. 5 Testimony ff. Tr. 11924 and NRC Staff Witness Mr. John R. Sears ff. Tr. 12638, pp. 27-29. Governor Brown submitted the testimony of Messrs. Richard B. Hubbard and Gregory C. Minor which addressed certain aspects of this planning standard. (Hubbard/Minor Testimony ff. Tr. 12313)

214. Plant system and effluent parameter values, equipment status and initiating conditions for each of the four emergency action classes are identified and

specified for Diablo Canyon. (Applicant Panel No. 5 Testimony ff. Tr. 11924, p. 5-2; Applicant Ex. 73, §4)

215. The capability exists to predict core damage prior to a release in the event of a LOCA. (Applicant Ex. 73, §6; Applicant Panel No. 5 Testimony ff. Tr. 11924, pp. 5-2, 5-3)

216. A network of radiological monitors which can be used for measuring unusual radiological releases has been established. The network involves a variety of monitors which have capabilities for a wide range of measurement. The monitors include area monitors, process monitors, air sampler monitors and laboratory instruments. (Applicant Ex. 73, §7)

217. Radiation effluent monitors and samplers are installed in the plant. These monitors include plant vent monitors for noble gases, particulates and iodines, liquid effluent monitors and a steam generator blowdown tank vent monitor. (Applicant Ex. 73, §7)

218. The Applicant has the capability for continuing radiological assessment during an accident. Assessment includes provisions for sampling of reactor coolant, containment atmosphere, plant vents, and building spaces. These measurements provide source term information which can be used to evaluate conditions, release rates, total releases and effectiveness of actions taken to terminate the accident. (Applicant Ex. 74A; Applicant Panel No. 5 Testimony ff. Tr. 11924, p. 5-10)

219. Field monitoring capabilities have been established. (Applicant Ex. 73, §§6, 7 and 8) San Luis Obispo County and the State of California have also made provisions to assess the consequences of radiological releases during off-normal and accident conditions. (Applicant Ex. 80, §1.6; Applicant Ex. 82, §V.D.)

220. The Applicant has established an EARS system which is a computerized graphical display of dispersion of an effluent. The system calculates dose rates downwind from the source using data from the radiological monitors and from meteorological instrumentation. This system provides graphical displays and calculated results to the Control Room; TSC; EOF; Applicant's Corporate Center; and California Office of Emergency Services. These locations can manually activate the EARS system. (Sears Testimony ff. Tr. 12638, p. 28; Applicant Ex. 73, §7)

221. Instructions have been established for making manual dose calculations if the EARS system is inoperable. Personnel expected to make manual dose calculations have attended a training course for that purpose. (Sears Testimony ff. Tr. 12638, p. 28) Manual dose calculations are made as a backup to the computerized dose calculations. (Skidmore, Tr. 11964; Applicant Ex. 73, App. J)

222. The Applicant has provided portable health physics equipment for both routine use and emergency purposes. Emergency kits are provided for radiological

emergency monitoring onsite and offsite, evacuation, radiological injury, first aid and post-accident sampling. (Applicant Ex. 73, §7; Applicant Panel No. 5 Testimony ff. Tr. 11924, pp. 5-7 through 5-9)

223. The Applicant has procedures for immediate radiation protection and assessment. These procedures address radiological accidents involving injury to personnel, radiological fires, inplant radiological spills and release of airborne radioactive material. (Applicant Ex. 74A; Applicant Panel No. 5 Testimony ff. Tr. 11924, p. 5-9)

224. Joint Intervenors assert that the Applicant has not quantified the error band on plant vent monitor readings which are needed for calculating radiological releases. The error associated with plant vent monitors could be in the range of 10 to 50 percent. (Shiffer/Boots, Tr. 11952-959) Joint Intervenors believe that the size of this error band precludes confidence that releases can and will be promptly and accurately assessed during an emergency at the plant. (Joint Intervenors Proposed Findings, p. 47)

225. The accuracy with which radiological releases from the plant are measured is dependent on the system being used to make the measurement. The Applicant has several different independent methods for quantifying radiological releases. The best way to quantify release is with a sample of the source and a known flow rate out. Monitoring a flow containing radioactivity as it passes by a monitor is also a suitable way of estimating releases. A less accurate way of quantifying releases is to back-calculate release rates from environmental measurements. (Shiffer, Tr. 11956)

226. Measurements of radiological dose rates in the field are accurate for assessing individual doses. The initial estimates of release from plant vents utilizing monitors are not intended as the primary means of calculating doses to the public. Field measurements will be used for that purpose. (Shiffer, Tr. 19966-967)

227. Regulatory Guide 1.97, Revision 2, specifies that the accuracy of measurements for vent monitors should be within a factor of 2. (Footnote 8, p. 1.97-18) We interpret that specification to encompass the range of accuracy specified by the Applicant's witnesses. Based on the redundant means for assessing radiological doses to the public and for assessing escape of radioactive material from the plant and the regulatory guidance on this subject, we conclude that the accuracy for instruments specified by Applicant's witnesses is sufficient for the purpose intended.

228. Joint Intervenors assert that the Applicant has not quantified the error band associated with deposition velocity of the plume, plume height, or dispersion predication. The Applicant's witness accepted the assertion as true. (Shiffer, Tr. 11963)

229. The meteorological model used by the Applicant is constructed to calculate effluent dispersion which bounds experimental dispersion data. It is therefore conservative. (Shiffer, Tr. 11963) Field radiation measurements will be used to

confirm atmospheric dispersion calculations. If there are discrepancies between the meteorological dispersion calculation and the field monitors, reliance for dose estimates to the public would be placed on the field measurement. (Keyworth, Tr. 11960)

230. The Board concludes that the uncertainties in parameters or computed results of the meteorological model for plume dispersion are not significant for the purpose intended. Results from the meteorological model displayed through the EARS system give a rapid initial assessment and continuing assessment of the plume direction and dispersion. However, radiation measurements will be made in the field by monitoring teams in order to assess dose to the public. The Board finds that the uncertainty inherent in the meteorological model is not significant for public health and safety in that adequate means exist for monitoring actual radiation doses to the public.

231. The Applicant was required by the Diablo Canyon Low Power Operating License to submit a proposal for compliance with Revision 2 of Regulatory Guide 1.97, pertaining to instrumentation necessary to assess plant conditions immediately following an accident. (Brown Proposed Findings, p. 20; Staff Ex. 32) The Applicant's review under this requirement showed that 21 out of 69 listed items required work to bring the Applicant's equipment into compliance with Regulatory Guide 1.97. The Applicant committed to complete the work to bring its equipment into compliance with Regulatory Guide 1.97 prior to June 1983 as required by the Staff. (Brown Proposed Findings 5, 6, p. 21; Staff Ex. 32)

232. Governor Brown objects that this submittal is cursory and conclusory and provides no details of how the Applicant intends to comply with the regulatory guidance by June 1983 or in fact by any other date. (Brown Proposed Findings, p. 21)

233. The Board has reviewed the Applicant's document listing the equipment. (Staff Ex. 32) It lists 48 items for which no corrective action is needed. The inplant monitors, which were shown as Table 1 of Applicant's Panel No. 5 Testimony, were all listed among those items needing no correction. Items on that list which have not yet been installed have been obtained and are on site. (Keyworth, Tr. 11982-984)

234. The Board concludes that the accident assessment equipment which is listed in Staff Exhibit 32 is or will be installed and that no additional corrective actions are needed to meet the requirements of this planning standard. The Applicant has submitted a written commitment to complete the remaining items (which are important but not required for this planning standard) prior to June 1, 1983 as required by Staff guidance. The Staff has adequate enforcement capabilities to see that this is done. We see no error in this procedure and accordingly we find this issue of Governor Brown's to be without merit.

235. Messrs. Richard B. Hubbard and Gregory C. Minor testified on behalf of Governor Brown that the Applicant's emergency procedures are inadequate since

they do not provide an indication to the operator whether reliance is being placed on equipment that is non-safety related. (Hubbard/Minor Testimony ff. Tr. 12313, p. 16) The witnesses testified that in their view the operating procedures should contain an asterisk beside equipment that is non-safety related or, as an alternative, that all non-safety-related equipment should be qualified to safety-related status. (Hubbard, Tr. 12320-321)

236. The witnesses based their assertion on paragraph 1 of Section I of NUREG-0654. That paragraph states, "facility emergency procedures shall specify the kinds of instruments being used and their capabilities." The witnesses believe that the word "capabilities" in that criterion refers to the capability of the equipment to withstand the accident environment. (Minor, Tr. 12325)

237. Messrs. Hubbard and Minor cited in their testimony Applicant's commitment that it was in the process of insuring that its operators are aware of which instruments mentioned in its revised and expanded emergency operating procedures (other than primary instruments) may not be available due to lack of qualification. (Hubbard/Minor Testimony ff. Tr. 12313, p. 16)

238. Governor Brown's witnesses may have strained the definition of the term capabilities in this context beyond what was intended. (Tr. 12325) In the context of Criterion I.a of NUREG-0654, we do not think that the term capabilities referred to environmental qualification of equipment or to safety-related equipment. Our perusal of Table 2 of Regulatory Guide 1.97, Revision 2, suggests a simpler meaning. The instruments noted therein are accompanied by notations as to the range of measurement capabilities required for each monitoring task. In the context of a criterion requiring the identification of parameter values, we find this interpretation of capability to be more reasonable.

239. The witnesses demonstrated some confusion over the term "safety-related" and "environmentally qualified." They eventually conceded that the equipment they had in mind did not meet the definition of safety-related equipment. They concluded that the equipment should at least be qualified for the environments that it must withstand. (Minor, Tr. 12332) The issue finally reduced to the assertion that in addition to operator training the witnesses would like something in the procedure to denote equipment which might not be available when called upon to perform its task. (Hubbard, Tr. 12333)

240. Governor Brown requested in his proposed findings that the Board take official notice of the Staff's SER in the TMI Restart Proceeding where the Staff supported the need to identify the qualification status of equipment relied upon in an emergency. The Board declines to do that since the Staff has issued an SER in the Diablo Canyon proceeding covering the same subject. (NRC Staff Ex. 31)

241. Staff Exhibit 31 (p. B-10) lists four criteria for the exemption of equipment from environmental qualification:

- (1) Equipment does not perform essential safety functions in the harsh environment and equipment failure in the harsh environment will not

impact safety-related functions or *mislead an operator* (emphasis added).

- (2) a. Equipment performs its functions before its exposure to the harsh environment, and the adequacy for the time margin provided is adequately justified.
b. Subsequent failure of the equipment as a result of the harsh environment does not degrade other safety functions or *mislead the operator* (emphasis added).
- (3) The safety related function can be accomplished by some other designated equipment that has been adequately qualified and satisfies the single failure criterion.
- (4) Equipment will not be subjected to a harsh environment as a result of the postulated accident.

These criteria show, among other things, that the Staff has considered the effect on the operator of malfunctioning equipment in its criteria for determining whether or not equipment should be environmentally qualified.

242. Based on the fact that the Applicant intends to train its operators on the equipment which is not environmentally qualified, and further on the fact that the criteria for environmental qualification include consideration of the impact of failure on operators, the Board concludes that this concern is adequately addressed. We see no merit in the wholesale classification of equipment as safety related. We see no harm in placing asterisks in the emergency procedures next to equipment which is not environmentally qualified as suggested by Mr. Hubbard (Tr. 12320), although there is little gain in safety for so doing. We conclude that this is an issue of minor safety significance and we therefore decline to order the Applicant to place asterisks in his operating procedures manual next to nonenvironmentally qualified equipment.

243. FEMA has found the offsite monitoring assessment capabilities under this standard to be satisfactory. (Applicant Panel No. 1 Testimony ff. Tr. 11682, p. 5, Attach. 2; Eldridge Testimony ff. Tr. 12688, pp. 5-6)

244. The Board concludes that onsite and offsite plans for accident assessment comply with the standards of NUREG-0654, Section I and of 10 CFR 50.47(b)(9).

Planning Standard (b)(10): Protective Actions

245. Planning Standard (b)(10) states: A range of protective actions have been developed for the plume exposure pathway EPZ for emergency workers and the public. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.

246. Procedures for the activation and functioning of the onsite emergency organization, including use of an emergency warning signal system, are in place. The warning system is to be used to alert onsite personnel that an emergency condition exists. The actions to be taken upon activation of distinctively different signals are to be communicated to onsite visitors and construction workers as well as to all onsite plant personnel. Offsite communication systems, including telephones and radio broadcasts, are also in place and available to warn the public (Applicant Emergency Plan, Ex. 73, §§6, 7; Sears Testimony ff. Tr. 12638, p. 32)

247. Methods exist to account for plant staff personnel, visitors and any construction workers who may be on site. (Sears Testimony ff. Tr. 12638, p. 33; Applicant Ex. 73, §6.3.1.2.)

248. Evacuation of onsite non-essential personnel is planned as a protective action. (Applicant Ex. 73, §6.3.1.3; Applicant Ex. 75, p. 6-5)

249. Sheltering is used as a protective action for non-essential personnel on site when the dose expected during evacuation is higher than that which would be received in shielded areas. (Applicant Panel No. 6 Testimony ff. Tr. 12184, p. 6-2)

250. The Applicant can evacuate onsite non-essential personnel even during heavy rains on more than one road. It can also provide evacuation by helicopters or boats. (Sears, Tr. 12649, 12667-69, 12791-792; Shiffer, Tr. 12773-776)

251. Persons remaining or arriving on site during the emergency will receive protection by using respiratory equipment as required, using protective clothing, by taking thyroid blocking pills when it is determined that their use is appropriate and by using dosimetry and contamination control. (Applicant Emergency Plan, §§6.3.2 and 6.3.3; Applicant Panel No. 6 Testimony, p. 6-2)

252. The evacuation time estimate made by Applicant conforms with the requirements of Appendix 4 of NUREG-0654 and is therefore accepted for the purposes of this case. (Sears Testimony ff. Tr. 12638, p. 34; "*Evacuation Times Assessment Study for the Diablo Canyon Nuclear Plant*," (Applicant Ex. 75A)) A second estimate of evacuation time, which was done independently by the TERA Corporation, leads to similar estimates as the above report. (Applicant Ex. 84)

253. The plan includes a procedure that provides criteria for expanding the boundaries of onsite controlled areas or the setting up of new controlled areas if the need arises during an emergency to establish administrative control for radiation protection purposes. (Sears Testimony ff. Tr. 12638, p. 34; Applicant Ex. 74A)

254. The plan sets out the mechanism for recommending protective action to the appropriate State and County authorities after the occurrence of a radiological event. (Applicant's Ex. 75A, Number EP-RB-10.)

255. FEMA's evaluation of offsite preparedness found no corrective actions needed to meet this planning standard. (Applicant Panel No. 1 Testimony ff. Tr. 11782, Attach. 2; Eldridge Testimony ff. Tr. 12688, p. 5-6)

256. Ingestion pathway protective actions have been developed by the Applicant, the State and the County. Actions would be taken by the State and County to prevent or reduce the concentration of radioactivity in human food and animal feed. (Applicant Ex. 73, App. C, pp. 12, 13, 35; Applicant Ex. 80, §II.10)

257. The County plan has provisions for notifying all segments of the transient and resident population for protecting persons whose mobility is impaired due to institutional or other confinement; for use of radioprotective drugs for emergency workers and institutionalized persons; the means of relocation, including buses needed for non-car owners and school populations; and precautionary measures such as limiting hospital admissions, closing schools, parks, and beaches. (Applicant Ex. 80, §§II.5, II.7, II.8; Applicant Ex. 81, §III.01, III.02, III.05, III.08)

258. Joint Intervenors' witnesses challenged the evacuation time estimates for several reasons: (1) Traffic will not flow at maximum capacity; (2) Police would not control traffic and traffic would stagnate; (3) evacuation times do not account for bus or ambulance trips; (4) the number of private vehicles is undercounted; and (5) shadow evacuation from outlying areas will cause traffic backup in the EPZ. (Plotkin/Pulido Testimony ff. Tr. 12580, p. 3-10; Tr. 12617-621) The witnesses consistently urged the most conservative assumptions, however, which the Board concludes are not credible. (Plotkin, Tr. 12599-600, 12604)

259. The purposes for evacuation time estimates are to identify transportation routes for which traffic control planning is needed and to provide time estimates which enable decision-makers to choose between sheltering and evacuation as protective actions. (Sears Testimony ff. Tr. 12638, p. 29-30) Extremely conservative assumptions do not serve these purposes. (Urbanik, Tr. 12389-400) The time estimates by T. R. C. Voorhees were realistically made over a range of normal and adverse conditions. These provide a range of estimates of evacuation times to decision-makers. (Winslow, Tr. 12193-207; Urbanik, Tr. 12380) Applicant's and Staff's witnesses both conclude that police can control traffic. (Winslow, Tr. 12222; Urbanik, Tr. 12394) Accidents are considered in traffic flow estimates and they do not affect overall time estimates significantly. (Urbanik, Tr. 12381) The number of ambulance and bus trips required would be too small to impact overall evacuation times. (Urbanik, Tr. 12391-392) The number of vehicles involved in an evacuation is not undercounted since the estimate of 1.3 vehicles per household is consistent with recent studies. (Urbanik, Tr. 12383) Voluntary evacuation from outside the BEPZ will not cause traffic backups within the EPZ. (Winslow, Tr. 12779-80)

260. The Board has considered Joint Intervenors' assertions on public and emergency worker behavior in its analysis of Planning Standards (b)(1), (b)(2) and (b)(7) where we conclude that their proposed actions are not warranted. We conclude that time estimates for emergency evacuation of the public within the plume exposure EPZ are valid and in conformance with Appendix 4 of NUREG-0654. The Applicant has conformed to the onsite criteria of NUREG-0654 for

protective actions. The Board therefore finds that adequate protective actions can be taken both on site and off site in the event of an emergency and the requirements of 10 CFR 50.47(b)(10) and criteria of Part J of NUREG-0654 have been met.

Planning Standard (b)(11): Radiological Exposure Control

261. Planning Standard (b)(11) states: Means for controlling radiological exposures, in an emergency, are established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides.

262. Programs to control radiological exposures of emergency workers have been established by Applicant's site emergency plan (Applicant Ex. 73, §§6.3, 7.4); by Applicant's Implementing Emergency Procedures (Applicant Exs. 74, 74A; Applicant Ex. 75A, RB 4-6); by the San Luis Obispo County Plan and procedures (Applicant Exs. 80, 81, 81A) and by the State of California Plan (App. B of Applicant Ex. 73). (Cf. written testimony of Applicant Panel No. 5 ff. Tr. 11924, pp. 5-14 to 5-17; Sears Testimony ff. 12638, pp. 34-35; Applicant Ex. 73, §6; Sears Testimony ff. Tr. 12638, p. 35; Applicant Panel No. 10 Testimony ff. Tr. 12022, p. 10-3) Joint Intervenors and Governor Brown submitted no evidence on this standard.

263. Applicant's program for controlling radiological exposure of emergency personnel during an emergency is consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides. (Sears Testimony ff. Tr. 12638, p. 35; Applicant Panel No. 10 Testimony ff. Tr. 12022, p. 10-3)

264. Applicant's means for controlling radiological exposures to emergency personnel during an emergency adhere to criteria of NUREG-0654, Part K and satisfy the requirements of 10 CFR §50.47(b)(11) and Appendix E.IV.E of 10 CFR Part 50. (Sears Testimony ff. Tr. 12638, p. 36)

265. FEMA's evaluation of site preparedness to control radiological exposures of emergency workers set out a single corrective action, *i.e.*: "Provisions must be made for the distribution of dosimeters, both self reading and permanent record devices, to emergency workers. This equipment should be permanently located in the county." (Attach. 2 to Applicant Panel No. 1 Testimony ff. Tr. 11782, p. 5) FEMA will verify the corrective action when such action is taken. (Eldridge Testimony ff. Tr. 12682, p. 13)

266. The Board concludes that the corrective action recommended by FEMA must be completed prior to operation at full power. In all other respects the Board finds that onsite and offsite planning meet the requirements of 10 CFR 50.47(b)(11) and the criteria of Part K of NUREG-0654.

Planning Standard (b)(12): Medical and Public Health Support

267. Planning Standard (b)(12) states: Arrangements are made for medical services for contaminated injured individuals.

268. Applicant has arranged for a local and a backup hospital to provide medical services for contaminated injured individuals. These hospitals are French Hospital in San Luis Obispo and Saint Francis Memorial Hospital in San Francisco. Both have the capability for evaluating radiation exposure and uptake and the capability to handle contaminated individuals. (Applicant Ex. 73, §§5.3.3.2, 6.3.9, App. H. See also Applicant Panel No. 7 Testimony ff. Tr. 12065, Attach. 16, App. E, Part C and App. L, St. Francis Memorial Manual on Admission and Management of Radiation Casualties.)

269. The Applicant has provided for onsite first-aid capability to handle medical emergencies including those involving radiological contamination. (Applicant Ex. 73, §§7.5.2, 8.1.16) The first-aid room is located in the access control area. It is equipped with standard first-aid supplies and decontamination equipment. (Sears Testimony ff. Tr. 12638, p. 37)

270. The Applicant has provided for transport of victims of radiological accidents to hospitals. These transport services would be provided by San Luis Ambulance Company, San Luis Obispo; Air Ambulance, San Carlos; and San Francisco Ambulance Company, San Francisco. (Applicant Ex. 73, §5.3.3 and App. E)

271. Training has been provided to medical support personnel who would treat an injury which might involve radioactive contamination. Nine physicians and 13 nurses from French Hospital and St. Francis Memorial Hospital have attended radiological courses offered by Oak Ridge Associated University, Oak Ridge, Tennessee. (Applicant Panel No. 7 Testimony, p. 7-2)

272. Drills involving the transport and treatment of simulated contaminated individuals from the plant have been conducted with the two hospitals supporting Diablo Canyon. Drills at French Hospital were conducted August 1977, May 1979, August 1980, June 1981 and August 1981. Drills at St. Francis Memorial Hospital were conducted July 1981 and November 1981. (Applicant Panel No. 7 Testimony, p. 7-3)

273. San Luis Obispo County has approximately 10 to 12 ambulances available. There are 275 physicians in the County of which approximately 90 have attended a seminar entitled "Medical Management of Radiation Accidents." (Skidmore/Shiffer Testimony ff. Tr. 12066-067; Applicant Panel No. 7 Testimony ff. Tr. 12065, Attachs. 11, 18, 19)

274. Joint Intervenors assert in their proposed findings (page 56) and attempted to elicit on cross-examination that the number of ambulances and trained medical personnel of San Luis Obispo County were inadequate to cope with a major

radiological emergency at Diablo Canyon. Joint Intervenors appear to be reasoning from the premise that large numbers of contaminated individuals would have to be transported by ambulance to hospitals to receive emergency medical treatment in a radiological emergency.

275. Emergency medical services are needed for persons having traumatic injury, not for treatment of contaminated individuals. Persons who are contaminated (but not physically injured) can be decontaminated by someone other than a physician. Contaminated uninjured persons do not require an ambulance for emergency transportation to a health care facility. (Shiffer, Tr. 12071-072, 12074-075)

276. The number of physicians required to cope with contaminated injured persons on site could not be estimated by the Applicant's witness. These numbers depend on the possible number of physical casualties that might occur during an emergency. The witness felt subjectively that the number of physicians available was adequate. (Shiffer, Tr. 12071)

277. Considering the number of physicians in the County, the number who have received varying amounts of training on radiological matters and the fact that the principal emergency requirement is to treat physical injury, the Board concludes that treatment capability exists to handle a substantial number of injured contaminated persons in an emergency.

278. We have no evidence before us nor do we see any reason for believing that the number of physical injuries among the general public would increase substantially during a radiological emergency. Thus we conclude that the number of ambulances and physicians that normally serve the County could reasonably be expected to serve the general population during a radiological emergency.

279. San Luis Obispo County plans for medical emergencies are given in Section II.9 of the County plan. (Applicant Ex. 80) The County plan provides for screening of individuals for radiological monitoring and decontamination and emergency treatment of injured individuals who are also contaminated. It also provides that if County medical resources become exhausted the County Health Officer may request the State Department of Health Services Disaster Medical Services to declare a Level 2 medical emergency and to provide State level assistance. (County Plan II.9, pp. 1-3)

280. FEMA has evaluated the status of offsite preparedness on the part of the County relating to this planning standard and found it to be satisfactory. (Applicant Panel No. 1 Testimony ff. Tr. 11782, p. 5 and Attachs. 2, 3; Eldridge Testimony ff. Tr. 12682, pp. 5-6)

281. Planning Standard L(3) of NUREG-0654 assigns to the State the responsibility to develop lists indicating the location of public, private and military hospitals and other emergency medical services facilities within the State or contiguous States considered capable of providing medical support for any contaminated injured individual. A list of hospitals in addition to those already named

has been provided in the State plan. (Applicant Ex. 82A, §§V15, 16) The capabilities of these hospitals for dealing with contaminated injured individuals are not specified. The Staff should assure itself through consultation with FEMA that this criterion is met.

282. The State plan for handling contaminated injured persons is contained in Procedure E-11, Volume 2, Annex 2 of Applicant's Exhibit 82A.

283. The record is incomplete regarding the requirements stated in Footnote 1 of Part L of NUREG-0654. The footnote states that an integrated emergency medical services system and a public health emergency plan meeting certain standards and provisions of law should be a part of and consistent with overall State and local disaster control plans and should be compatible with the overall emergency response plan for the facility. We have no testimony on this matter and are therefore unable to assess its significance or the degree of compliance by any of the emergency response organizations. The Staff should investigate this matter, assessing carefully its significance and the degree of compliance on the part of appropriate response organizations and should achieve a satisfactory resolution prior to plant operation.

284. On the basis of the record before us the Board concludes that adequate transportation and treatment facilities exist for the treatment of contaminated injured individuals in a radiological emergency. There is reasonable assurance that medical personnel providing these services are adequately prepared to treat contaminated injured individuals. We therefore find, with the exceptions noted in Findings 281 and 283, that the criteria of Planning Standard (b)(12) have been met by the Applicant and offsite organizations. The Staff should assess the matters noted in our exceptions and achieve a satisfactory resolution prior to operation of the plant.

Planning Standard (b)(13): Recovery and Reentry Planning and Postaccident Operations

285. Planning Standard (b)(13) states: General plans for recovery and reentry are developed.

286. The Applicant and the NRC Staff both presented written testimony on this standard. (Applicant Panel No. 8 Testimony ff. Tr. 11989; Sears Testimony ff. Tr. 12638, p. 38) Joint Intervenors and Governor Brown conducted cross-examination but submitted no written testimony.

287. General provisions for recovery and reentry through the post-emergency recovery organization have been established by the Applicant. (Applicant Ex. 73, §9, and App. A, §10)

288. An emergency recovery organization has been established with the position, title, authority and responsibilities of individuals who will fill key positions in this organization. (Applicant Ex. 73, §9)

289. A method for periodically estimating total population exposure has been established. (Applicant Panel No. 8 Testimony ff. Tr. 11989, p. 8-3)

290. Means have been established for informing response organizations that a recovery operation is to be initiated. (Applicant Ex. 73, §9)

291. Under the County Plan the Direction and Control Group has responsibility for implementing recovery and reentry. The Unified Dose Assessment Center (UDAC) will continue to provide data for a periodic estimation of the total population exposure to the Direction and Control Group. (Applicant Exs. 80, 81, §§II.11, III.01, III.02)

292. General provisions for recovery and reentry have been included in the State plan. These provisions assign general functional responsibilities to State offices and provide for general radiological guidance and criteria for reentry of an area after an accident. The State Office of Emergency Services will provide support to the County reentry and recovery effort. The Department of Health Services, Radiologic Health Section will establish criteria for reentry and recovery and will monitor that effort. The Department of Health Services, Disaster Medical Services Section will assist County efforts to provide medical follow-up of exposed individuals. (Applicant Panel No. 8 Testimony ff. Tr. 11988, p. 8-3; Applicant Ex. 73, App. C; Applicant Ex. 82A, Procedure E-15)

293. The FEMA representative, Mr. Eldridge, maintains an awareness of development of the State plan although FEMA has not yet conducted its formal review. The State has primary as opposed to backup responsibility for recovery and reentry. Mr. Eldridge concluded that recovery and reentry does not require an immediate response and does not deal with matters of an immediate life-threatening nature. FEMA concluded that the State could respond in the area of recovery and reentry if needed. There are current existing arrangements with the Department of Energy and the Environmental Protection Agency to fill in for the State in any areas where it could not respond. (Eldridge, Tr. 12708-710)

294. Joint Intervenors elicited on cross-examination that the State Office of Emergency Services Deputy Director had testified in his deposition that State plans for recovery and reentry were not adequate. The Director, however, did not testify in this proceeding and we are unable to rely on the deposition statement without more detailed reasoning. (Skidmore, Tr. 12005)

295. Our own perusal of the State Plan, in the area of recovery and reentry, discloses that it contains a bare minimum of technical (as opposed to administrative) planning for recovery and reentry. It describes general plans and procedures for reentry and recovery and it describes in general the means by which decisions to relax protective measures are reached. (Procedure E 15, Applicant Ex. 82A) In view of the guidance for this standard, which prescribes the preparation of general plans, the lack of life-threatening urgency for recovery and reentry operations, and the availability of other Federal agencies to provide assistance, we conclude that

the State with the help of others could conduct a recovery and reentry operation if needed.

296. Nevertheless, we are not impressed with the State planning for this standard. We were told throughout the hearing that this is one of the few areas of principal emergency responsibility of the State. When we review the plans under this responsibility we find them cursory in their technical content. (Ex. 1, Procedure E-15, Applicant Ex. 82A) We are not sure how simple a matter recovery and reentry might be even though we accept that it does not deal with questions of immediate life-threatening importance. The State plan, although marginally adequate, could be enhanced considerably by more thoughtful consideration of the radiological criteria to be applied to permit reentry of contaminated area.

297. Joint Intervenors assert that neither the Applicant nor San Luis Obispo County has estimated or provided for the cost of recovery and reentry after a major accident. (Joint Intervenors Findings 2 and 4, pp. 57-58) Neither regulation nor guidance, however, requires that such costs be estimated or provided for under this planning standard. (Shiffer, Tr. 11995-997) The Board concludes that there is no need for estimating such costs because the estimates would be speculative and would not contribute to the protection of public health and safety.

298. The Board finds, based on the record as a whole, that the Applicant, the County and the State have established general plans and criteria for conducting a reentry and recovery operation in the event of a radiological emergency at Diablo Canyon. We have reasonable assurance that a recovery and reentry could and would be undertaken in the vicinity of Diablo Canyon both on site and off site in the event of a radiological emergency. The Staff should assure itself, based on the forthcoming FEMA review, that adequate radiological criteria for public reentry of contaminated areas are specified by the State in its plans.

Planning Standard (b)(14): Exercises and Drills

299. Planning Standard (b)(14) states: Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.

300. This planning standard was addressed in the submitted written testimony of Applicant Panel No. 9, the testimony of Mr. Sears of the NRC Staff and Mr. Eldridge of FEMA. Joint Intervenors and Governor Brown conducted cross-examination of witnesses but did not submit written testimony on this standard.

301. An emergency exercise was conducted at Diablo Canyon on August 19, 1981. The exercise simulated an accident sequence which began with an unusual event and progressed through more serious classes to a general emergency that simulated offsite radiation releases. The emergency exercise tested several areas

of the Applicant's emergency response organization. These included such functional areas as emergency organization and control, accident classification, dose assessment, notification of offsite authorities, augmentation of onsite organizations, first aid, transportation of a contaminated injured individual, onsite and offsite monitoring, response of a fire brigade and onsite evacuation and reactor plant control. (Applicant Panel No. 1 Testimony, Attach. 1; Sears Testimony ff. Tr. 12638, p. 39)

302. The exercise included mobilization of State and local emergency response personnel and resources. State and County personnel participated in the exercise at the San Luis Obispo County EOC. Personnel responded in a timely manner. The County demonstrated a good capability to alert, notify and mobilize emergency personnel. Personnel from the Sheriff's Office, California Highway Patrol, CALTRANS, and State parks and beaches participated and followed their emergency plan. Closure of two State parks was achieved during the exercise. (Applicant Panel No. 1 Testimony, Attach. 1, p. II-2-6)

303. Preliminary findings by FEMA were issued to exercise participants in an informal debriefing two days after the exercise. FEMA findings and recommendations for corrective actions were issued within 14 days of the exercise. (Applicant Panel No. 1 Testimony, Attach. 1, p. I-2) The NRC Office of Inspection and Enforcement, Region V issued a critique of the onsite aspects of the exercise. (Applicant Panel No. 1 Testimony, Attach. 5)

304. Official observers from Federal, State and local governments were present at the exercise. They observed the exercise from a variety of viewpoints and submitted an evaluation and critique when the exercise was completed. (Applicant Panel No. 1 Testimony, Attach. 1, p. 1-3; see also Part 2, Exercise Evaluation Findings and Recommendations)

305. A description of exercise development and operation was provided by FEMA. The description states the basic objectives of the exercise, a description of the dates, times and places for the exercise. It also includes a schedule of simulated events and a description of these events, a narrative summary describing the conduct of the exercises and a description of the arrangements for the advance material to be provided to official observers. (Applicant Panel No. 1 Testimony, Attach. 1, pp. 1-1 through 1-8)

306. The exercise scenario was developed by the Applicant in coordination with FEMA Region 9. Local jurisdictions and the utility determined the depth of participation or level of exercise each would play based on general guidance of the FEMA regional office. The FEMA regional staff concurred in the scenario and its objectives and guidelines. (Applicant Panel No. 1 Testimony, Attach. 1, p. I-1)

307. FEMA's evaluation of the August 19 exercise listed four items which were not observed because equipment installation was not complete at that time. The items were: the siren system was not tested because it was not finished; monitoring receivers for special facilities such as hospitals and schools had not been

installed; the emergency broadcast system communication link was not complete and the setup of the Unified Dose Assessment Center was not fully tested. As these items are completed they will be tested and observed. (Applicant Panel No. 1 Testimony, Attach. 1, p. II-35)

308. Arrangements for scheduling drills are discussed in the Applicant plan (Applicant Ex. 73, §8) and in the County plan (Applicant Ex. 80, §V.2). The prescribed drills include communication drills, fire drills, medical emergency drills, radiological monitoring drills, and health physics drills as required by Part N.2 of NUREG-0654. (Sears Testimony ff. Tr. 12638, pp. 40-41) San Luis Obispo County has completed an initial cycle of drills and training. (Eldridge Testimony ff. Tr. 12682, p. 14 and attached schedule)

309. The Applicant disclosed in its response to interrogatories (Joint Intervenor Ex. 120) that basic drill objectives and evaluation criteria should be included in an Appendix to Procedure 2.1 of the Corporate Emergency Response Plan. Subsequent to the preparation of those responses the Applicant added the required information to the Corporate Emergency Response Plan Implementing Procedures. (Applicant Ex. 85, p. 18; Skidmore Tr. 12757-758) The revision has been reviewed by the NRC Staff which determined that it conforms to NUREG-0654 Criterion II.N.3B. (Sears, Tr. 12639-40) The Board finds this to be an adequate resolution of this issue.

310. Mr. Sears stated on cross-examination that in his view the most serious deficiency found during the exercise was that an operator sent to close a particular valve had trouble finding it. The NRC report on the matter pointed out the deficiency and recommended corrective actions that should be taken. These actions included supplying workers with better engineering diagrams and a more thorough description of equipment. (Sears, Tr. 12643; Applicant Panel No. 1 Testimony, Attach. A, p. 3) The Board finds this a reasonable resolution of the matter.

311. Part 50, Appendix E, Section F.1 specifies that exercises shall be conducted without mandatory public participation. Joint Intervenors Proposed Findings pp. 58, 59: (a), relating to upper echelon personnel; (e), referring to California Men's Colony and Cal Poly of San Luis Obispo; (f), referring to the evacuation of 45 persons; and (g), referring to the number of vehicles using Highway 101 as an evacuation route are all subject to the provision that an exercise not include mandatory public evacuation. Joint Intervenors' assertions on these items therefore do not identify defects in the exercise as it was performed.

312. Joint Intervenors assert in their Proposed Finding (b) that no city but Morro Bay participated in the exercise. We understand they believe that there should have been broader participation of cities within San Luis Obispo County. Paragraph N.1.B of NUREG-0654 specifies that the exercise scenario should be varied from year to year such that all major elements of the plans and preparedness organizations are tested within a five-year period. The Board concludes that all

cities within San Luis Obispo County having emergency responsibilities should participate under their SOP's in future exercises under that criterion.

313. Joint Intervenors made a number of assertions which appear to constitute a difference of opinion with those who planned the August 19th scenario as to whether certain items or assumptions should have been included in the exercise. These items include: Item h, concerning the assumed failure of critical equipment; j, the use of the northern evacuation route; k, assumed shortage of emergency workers; and l, simulation of only one minor medical complication. It is not self evident that different assumptions or actions on these matters would improve the plan or state of preparedness of the Applicant or San Luis Obispo County and our record does not give us any reasons for thinking so.

314. Joint Intervenors also felt the exercise was defective because adverse weather was not assumed. We have no evidence that assumptions about adverse weather conditions would assist in testing the plan. Section N.1.B of NUREG-0654, however, states that exercises should be conducted under various weather conditions and that some exercises should be unannounced. The Board concludes that it would be reasonable to conduct a future exercise during adverse weather as prescribed in that paragraph.

315. Joint Intervenors assert that the current draft of the San Luis Obispo County Plan was not available during the exercise. The current draft is a revision which was issued in October 1981 while the exercise was conducted in August 1981. The exercise was used as a device for making subsequent revisions in the plan. (Eldridge Testimony ff. Tr. 12682, p. 23) This assertion of Joint Intervenors is lacking in logic and without merit.

316. Joint Intervenors cite as a deficiency that numerous problems requiring corrective actions were found by FEMA and the State Office of Emergency Services. (Joint Intervenors Ex. 124) One of the stated goals of the exercise was to uncover deficiencies needing corrective action. The deficiencies cited by FEMA are therefore evidence that that goal was achieved. It appears to the Board that the uncovering of deficiencies constitutes a successful aspect of the exercise.

317. The FEMA evaluation of the August 19 field exercise concluded that it tested the integrated capability of a major portion of the elements of the emergency plans and organizations and that the participants demonstrated a good capability to handle the exercise's events and challenges. (Eldridge Testimony ff. Tr. 12682 at 22; Applicant Panel No. 1 Testimony ff. Tr. 11782, p. 2, Attach. 1) The concerns identified were considered correctable through training, drills, plan revisions or purchase of equipment. A schedule has been developed specifying how and when each concern is to be corrected. (Applicant Panel No. 1 Testimony ff. Tr. 11782, p. 2, Attach. 2, 4)

318. The Board finds that the Applicant's and County's emergency plans were adequately tested in the August 19 exercise. More drills and another exercise are scheduled for 1982. (Eldridge Testimony ff. Tr. 12688, pp. 14-15) The variations

in exercise scenarios prescribed in Part N of NUREG-0654 will permit additional testing of capabilities in future years. The 1981 exercise was adequately critiqued and evaluated, and deficiencies were scheduled for correction. The Board therefore concludes that the Applicant's and County's emergency response plans conform to the guidance given in Part N of NUREG-0654 and are in compliance with Planning Standard (b)(14).

Planning Standard (b)(15): Radiological Emergency Response Training

319. Planning Standard (b)(15) states: Radiological emergency response training is provided to those who may be called on to assist in an emergency.

320. This standard was addressed in the written testimony of Applicant Panel No. 10, Mr. John W. Eldridge of FEMA and Mr. John R. Sears of the NRC. Joint Intervenors and Governor Brown submitted no testimony; however, they cross-examined witnesses.

321. The Applicant has a radiological training program for both onsite and offsite emergency personnel. (Applicant Ex. 73, §8)

322. The State of California and the County of San Luis Obispo have radiological training programs. (Applicant Ex. 73, App. C (State plan), §V, Part J; Applicant Ex. 80, §V.1 (County plan))

323. Site-specific emergency response training for offsite emergency organizations which may be called upon to provide assistance in the event of an emergency is provided. (Skidmore, Tr. 12047-048)

324. The Applicant has provided training to medical, law enforcement, fire and other personnel having offsite responsibilities. Training has also been provided for offsite personnel responsible for radiological assessment and field monitoring. (Applicant Ex. 73, §8; Applicant Panel No. 10 Testimony ff. Tr. 12022, pp. 10-2, 10-3 and Attach. 17)

325. The training program for onsite emergency personnel includes routine drills that involve correction of incorrect performance and demonstration of correct performance by an instructor. The drills cover communication drills, fire drills, medical emergency, radiological monitoring and health physics. (Applicant Ex. 73, §8)

326. Paragraph 3 of Section O of NUREG-0654 specifies that first-aid training should include courses equivalent to Red Cross Multimedia. The record does not disclose whether this requirement is met. The Applicant should specify and the Staff should verify the quality of the first-aid training provided to Applicant's employees.

327. The Applicant's training program includes the specialized training and periodic retraining in the categories identified in Part O.4 of NUREG-0654. This training was verified during an NRC emergency preparedness appraisal team visit

to the Diablo Canyon site and Corporate Headquarters during December 1981. (Sears Testimony ff. Tr. 12638, p. 42)

328. The Applicant makes available the specialized training specified in the ten categories in Part O.4 of NUREG-0654 to State and local personnel or organizations on request. Such training has been requested by the California Department of Forestry, San Luis Obispo County Department of Health, and San Francisco Ambulance Service. (Skidmore, Tr. 12049)

329. Joint Intervenors, relying on Joint Intervenors' Exhibit 120, urge that the Corporate Emergency Response Plan should contain specific information on training programs involving corporate emergency personnel. The Applicant has revised Procedure 2.1 of the Corporate Emergency Response Plan to provide more specific information on training concerning corporate emergency response personnel. (Applicant Ex. 85; Skidmore, Tr. 12757-758) The NRC Staff has reviewed the revision and has found that it conforms to NUREG-0654 Part O.4. (Sears, Tr. 12639-640) The Board finds that this issue is adequately resolved.

330. Joint Intervenors argue that no radiological emergency response training is planned for general personnel who might have a role in emergency response such as auto repair, phone assistance, EBS personnel and workers other than monitoring personnel. (Joint Intervenors Proposed Findings, p. 60) In Joint Intervenors' view these persons might need personal protection training if they are requested to remain behind to perform their normal duties during the course of an ordered evacuation.

331. Persons having general work functions such as those described in the previous finding will not receive specialized radiological training under existing emergency plans. No criterion of the NRC or regulation requires such training. General workers will be treated in the emergency response as members of the general public. As such, they have general information on radiological matters available to them through the normal public information and education media which have been established (or will be) by the Applicant and the County. General workers who remain behind in a radiological emergency would be advised of radiological hazards by specialists conducting environmental radiation measurements in the County. (Skidmore, Shiffer, Kaefer, Tr. 12031-036; Ness, Tr. 12473-474)

332. The Board finds no evidence that general workers who might have some role in supporting emergency response, such as gas station or auto repair workers or bank workers, would be exposed to a hazardous environment even if they did remain behind during an evacuation. There is no evidence that they would or could be compelled to work in a hazardous environment. There is no evidence that the planned radiation monitoring would fail to protect general workers. Joint Intervenors' assertion that these workers should have radiological emergency training is without support in the record.

333. The establishment of annual drill and training schedules for the State, County and Applicant and the commencement of activities thereunder is necessary under this planning standard. This requirement was found to be in need of corrective action in the FEMA review. The second annual cycle is under development by the County, the State and the Applicant. This development was scheduled to be completed by March 15, 1982. FEMA will verify when this corrective action is completed. (Eldridge Testimony ff. Tr. 12688, pp. 15-16)

334. The Board concludes that there is reasonable assurance that radiological emergency response training is being provided by the Applicant, the State and the County to those personnel who may be called on to assist in an emergency and that the training requirements under Planning Standard (b)(15) have been met.

Planning Standard (b)(16): Responsibility for the Planning Effort: Development, Periodic Review and Distribution of Emergency Plans

335. Planning Standard (b)(16) states: Responsibilities for plan development and review and for distribution of emergency plans are established, and planners are properly trained.

336. This standard was addressed in the written testimony of Applicant Panel No. 1 and the written testimony of Mr. Sears of the NRC. Joint Intervenors and Governor Brown submitted no written testimony but conducted cross-examination of witnesses.

337. Responsibility for emergency plan development has been established by the Applicant, by the County and by the State. (Applicant Ex. 73, §8 and App. C, §V, p. 58 (State plan); Applicant Ex. 80, §V(County plan))

338. Emergency response planner training is being provided to Applicant and County staff through industry- and government-sponsored programs and other courses. (Applicant Panel No. 1 Testimony ff. Tr. 11778, pp. 1-9, 1-10; Sears Testimony ff. Tr. 12638, p. 44 and Tr. 12639-640; Applicant Ex. 73, §8; Skidmore, Tr. 12757-758)

339. An annual independent audit of the Applicant's emergency plan is provided for. The audit will cover implementing procedures, training, readiness testing, equipment, and interfacing with State and local organizations. (Sears Testimony ff. Tr. 12638, p. 44, Tr. 12639-40; Applicant Ex. 73, §8; Applicant Ex. 85; Skidmore, Tr. 12757-758)

340. Procedures exist for updating of the County plan. Procedures and responsibilities for making revisions and updates to the Diablo Canyon Emergency Plan Procedures include provisions for document control and distribution. (Sears Testimony ff. Tr. 12638, pp. 43-44; Applicant Panel No. 1 Testimony ff. Tr. 11778, p. 1-9; Applicant Ex. 73, §8)

341. The County Administrator has administrative responsibility for review and update of the County Plans and Procedures and distribution of revised documents. (Applicant Ex. 80, §V.4)

342. Joint Intervenor and Governor Brown raised the question whether the Applicant's Emergency Plan included designation of an overall emergency planning coordinator. (Joint Intervenor Ex. 120, pp. 13, 14; Hubbard/Minor Testimony ff. Tr. 12313, p. 9) At the time the Joint Intervenor's Exhibit 120 was prepared by the Applicant (September 2, 1981) such a person had not been designated. The Applicant, however, revised Procedure 2.1 of its Corporate Emergency Response Plan Implementing Procedures to designate an emergency planning coordinator. This individual has the responsibility for developing and updating of emergency plans and coordination of these plans with other organizations. (Skidmore, Tr. 12757-758; Applicant Ex. 85, pp. 4-7, 4-8) The NRC staff has reviewed these revisions and found that they comply with the requirements of NUREG-0654. (Sears, Tr. 12639-640) The Board concludes that this issue is adequately resolved.

343. Joint Intervenor, again relying on their Exhibit 120, asserted that the emergency plan did not specifically define the training requirements for the emergency planner. At the time Exhibit 120 was prepared, such requirements had not been defined. The Applicant subsequently revised Procedures 2.1 of its Corporate Emergency Response Plan so that it now defines the training requirements for the emergency planners. (Applicant Ex. 85, p. 7A; Skidmore, Tr. 12757-758) Staff review of this revision concludes that it conforms to Part P.1 of NUREG-0654. (Sears, Tr. 12639-640) The Board finds that this issue is now resolved.

344. Joint Intervenor's Exhibit 120 was also used to raise the question about whether the Applicant's Emergency Plan for conducting an independent annual review of emergency plans and procedures conforms to the criterion of Part P.9 of NUREG-0654. Governor Brown raised the same issue in written testimony. (Hubbard/Minor Testimony ff. Tr. 12313, p. 9) The Applicant revised Procedure 2.1 of the Corporate Emergency Response Plan and Implementing Procedures such that it now requires that independent annual reviews of the emergency preparedness program be conducted by the Institute of Nuclear Power Operations (INPO). (Applicant Ex. 85, pp. 11-12) This revision was reviewed by the NRC Staff and found to conform to the criteria of Part P.9. (Sears Testimony ff. Tr. 12638, pp. 44-45; Tr. 12639-640) The Board concludes that this issue is now resolved.

345. Joint Intervenor objected that the County Board of Supervisors has not committed itself to pay for efforts to continue revising the plan and training participants. The Applicant, however, has committed itself to assure that the funds necessary to maintain preparedness are available. The Board finds that this gives

reasonable assurance that the plan will be maintained and updated as necessary. (Skidmore, Tr. 11842-843)

346. FEMA has reviewed the offsite preparedness required under this standard and has no recommended corrective actions. (Eldridge Testimony ff. Tr. 12688, p. 16)

347. The Board concludes that it has reasonable assurance that Planning Standard (b)(16) has been adequately considered by the Applicant and the County, and that it has been reviewed by the Staff and that it is capable of being implemented. The requirements of 10 CFR 50.47(b)(16) and the criteria of Part P of NUREG-0654 have been met by the Applicant and San Luis Obispo County.

B. Contention 10: Pressurizer Heaters

348. Contention 10 states:

The Staff recognizes that pressurizer heaters and associated controls are necessary to maintain natural circulation at hot standby conditions. Therefore, this equipment should be classified as "components important to safety" and required to meet all applicable safety-grade design criteria, including but not limited to diversity (GDC 22), seismic and environmental qualification (GDC 2 and 4), automatic initiation (GDC 20), separation and independence (GDC 3 and 22), quality assurance (GDC 1), adequate reliable on-site power supplies (GDC 17), and the single failure criterion. The Applicant's proposal to connect two out of four of the heater groups to the present on-site emergency power supplies does not provide an equivalent or acceptable level of protection.

349. The parties accepted the definitions of the terms "important to safety," "safety-related," and "safety-grade" as set forth in a memorandum and attachment dated November 20, 1981 from H. R. Denton to the NRC Staff. These documents are included as Attachment B to the Bridenbaugh/Minor Testimony following Tr. 11671; Tr. 11558-59; Bridenbaugh/Minor, pp. 5, 6.

350. Messrs. John B. Hoch, Robert A. Young and Glenn E. Lang presented testimony on behalf of the Applicant. (Hoch/Young/Lang Testimony ff. Tr. 11550) Mr. Walton L. Jensen, Jr. testified on behalf of the Staff. (Jensen Testimony ff. Tr. 11621). Messrs. Dale G. Bridenbaugh and Gregory C. Minor presented testimony on behalf of Governor Brown. (Bridenbaugh/Minor Testimony ff. Tr. 11671) Joint Intervenors elected not to present testimony, but did cross-examine all witnesses.

351. The Commission requires, in Item II.E.3.1 of NUREG-0737, that emergency on-site power be supplied to the pressurizer heaters to obviate a possible unnecessary actuation of the emergency core cooling system, but defines

the heaters as non-class I-E loads, which are not required to be qualified as safety grade. (Jensen Testimony, p. 5; Tr. 11655; Hoch/Young/Lang Testimony ff. Tr. 11550, p. 3).

352. Safety-grade structures, systems and components are required for the safety functions set forth in Section III.C of Appendix A to 10 CFR Part 100. These functions are those necessary to assure:

- a. The integrity of the reactor coolant pressure boundary;
- b. The capability to shut down the reactor and maintain it in a safe shutdown condition; or
- c. The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to the guideline exposures of 10 CFR Part 100.

353. The pressurizer heaters are part of the normal control system which regulates primary system pressure. (Jensen Testimony ff. Tr. 11621, p. 2).

354. No particular safety function is served by maintaining the plant in a hot standby condition. (Jensen Testimony ff. Tr. 11621, p. 4).

355. Operation of the pressurizer heaters is not required to place and maintain the system in a cold shut down condition (below 200°F). (Jensen Testimony ff. Tr. 11621, pp. 2, 3).

356. Pressure control in the reactor coolant system can be maintained by systems other than the pressurizer heaters, *e.g.*, by using the charging and letdown or the high head safety injection systems, both of which are safety grade. (Hoch/Young/Lang Testimony ff. Tr. 11550, p. 2, Tr. 11562, 11567).

357. Hot standby is a condition in which the reactor is subcritical by at least 1% in reactivity and the coolant temperature is above 350°F. Hot standby cannot be maintained indefinitely without use of the pressurizer heaters. (Jensen Testimony ff. Tr. 11621, pp. 2, 3).

358. The pressurizer heaters are not needed to maintain natural circulation in the Diablo Canyon plant system, and the system which does insure maintenance of natural circulation (water level in the steam generators) is qualified as a safety-grade system. (Jensen Testimony ff. Tr. 11621, p. 4; Tr. 11655; Hoch/Young/Lang Testimony ff. Tr. 11550, p. 2).

359. The Staff has found the provision of emergency power at Diablo Canyon to be adequate for the purposes of the NUREG-0737 requirement. (Staff Ex. 25, SER Supp. 14, p. 2-20, 2-21).

C. Contention 12: Block and Power-Operated Relief Valves

360. Contention 12 states:

Proper operation of power-operated relief valves, associated block valves and the instruments and controls for these valves is essential to mitigate the consequences of accidents. In addition, their failure can cause

or aggravate a LOCA. Therefore, these valves must be classified as components important to safety and required to meet all safety-grade design criteria.

Relief and Block Valves. Joint Intervenors contend that the present classification of Diablo Canyon relief valves and associated block valves, instruments and controls does not comply with 10 CFR Part 50, Appendix A, Reg. Guide 1.26 and SRP (Reg. Guide 1.70), Section 3.22. Joint Intervenors also contend that General Design Criteria 1, 14, 15 and 30 are violated because relief and block valves have not been qualified under all transient and accident conditions.

Proper operation of power operated relief valves, associated block valves and the instruments and control for these valves is essential to mitigate the consequences of accidents. The TMI accident demonstrated this fact. In addition, their failure can cause or aggravate a LOCA. Therefore, these valves must be classified as important to safety and required to meet all safety-grade design criteria. However, the Diablo Canyon block and relief valves do not meet all safety-grade design criteria, in violation of the regulatory practices listed above. In addition, reactor coolant system relief valves form part of the reactor coolant system pressure boundary. When relief valve operation is unreliable, series block valves are relied upon to maintain the integrity of the pressure boundary. Despite these important safety functions, appropriate qualification testing has not been done to verify the capabilities of these block valves to function during normal, transient and accident conditions. In the absence of such testing and verification, the public health and safety are endangered.

361. The parties accepted the definitions of the terms "important to safety," "safety-related," and "safety-grade" as set forth in a memorandum and attachment dated November 20, 1981 from H. R. Denton to the NRC Staff. These documents are included as Attachment B to the Bridenbaugh/Minor Testimony following Tr. 11671. (See also Tr. 11558-59; Bridenbaugh/Minor Testimony ff. Tr. 11671, pp. 5, 6).

362. Messrs. John B. Hoch, Thomas N. Crawford, Edward M. Burns, Robert M. Grayson and Raymond J. Skwarek presented evidence on behalf of the Applicant. (Hoch/Crawford Testimony ff. Tr. 11590; Burns, *et al.*, Testimony ff. Tr. 11590). Mr. Walton L. Jensen testified on behalf of the NRC Staff. (Jensen Testimony ff. Tr. 11621) Messrs. Dale G. Bridenbaugh and Gregory C. Minor presented testimony on behalf of Governor Brown. (Bridenbaugh/Minor Testimony ff. Tr. 11671) Joint Intervenors presented no direct testimony, but did cross-examine all witnesses.

363. The pressurizers at Diablo Canyon are each equipped with three power-operated relief valves (PORV's) and three associated block valves. The function of the PORV's is to open at a lower pressure than that of the safety valves so as to

preclude the opening of the safety valves during mild pressure transients. The function of the block valves is to isolate a leaking or failed-open PORV. (Jensen Testimony ff. Tr. 11621, p. 9; Applicant Ex. 5, Diablo Canyon FSAR, Chapter 5; Hoch/Crawford Testimony ff. Tr. 11590, p. 4)

364. Only one PORV is necessary to perform the intended pressure relief function. A second PORV is provided for redundancy. These PORV's are safety grade. The third PORV was installed to provide the capability for full load rejection without reactor trip. This PORV, which performs no safety-related function, is constructed to safety-grade standards with the exception of its instrumentation and controls. All three block valves are safety grade. (Hoch/Crawford Testimony ff. Tr. 11590, pp. 4, 5)

365. The additional instrumentation and controls on the safety-grade PORV's affect the ability of the valves to open, but does not affect the ability of the valves to close and remain closed. (Jensen, Tr. 11653, 654)

366. A Masonellan series 20000 model PORV, representative of those used at the Diablo Canyon plant, has been tested by the Electric Power Research Institute (EPRI) in a program which included full-pressure steam, water, transition phase and loop seal conditions. The valve passed all test criteria. (Hoch/Crawford Testimony ff. Tr. 11590, p. 7)

367. A Velan model B10-3054B-13MS block valve was tested by EPRI under conditions representative of potential Diablo Canyon plant conditions. The valve fully opened and closed on demand. (Hoch/Crawford Testimony ff. Tr. 11590, p. 7)

368. Results of EPRI testing of relief and block valves are scheduled to be documented formally by EPRI by July 1982. The Applicant will submit plant-specific reports as required by the NRC, including qualification data on block valves and analyses of results of EPRI relief valve testing for applicability to the Diablo Canyon plant. (Hoch/Crawford Testimony ff. Tr. 11590, p. 8)

369. The valves were considered to be seismically qualified prior to the institution of the seismic reverification program. The Applicant is reviewing this qualification and has committed itself to whatever steps are necessary to maintain qualification of the valves. (Response of Pacific Gas and Electric Company to Joint Intervenors' and Governor Brown's Proposed Findings of Fact and Conclusions of Law, April 12, 1982, p. 5)

370. A failure of a PORV in the open position would cause the equivalent of a small-break LOCA. This would be terminated by the closure of the associated safety-grade block valve. (Jensen Testimony ff. Tr. 11621, p. 10; Hoch/Crawford Testimony ff. Tr. 11590, p. 6)

371. If an associated block valve failed to isolate a stuck-open PORV, the capability of the ECCS would be sufficient to permit safe shutdown of the reactor without the core being uncovered or damaged. (Jensen Testimony ff. Tr. 11621, p.

10; Staff Ex. 28, WCAP-9601, Section 3.3 of Volume III; Hoch/Crawford Testimony ff. Tr. 11590, p. 7)

372. No evidence was presented which would indicate that operation of the PORV's and block valves is related to the capability of the operator to shut down and maintain the reactor in a safe shutdown condition. The PORV's and block valves are mentioned in a number of emergency operating procedures; however, the procedures are designed to assure that the operator makes maximum use of all systems during accidents, whether or not the system is qualified as safety grade. (Jensen Testimony ff. Tr. 11621, p. 12)

373. Proper operation of PORV's and block valves is not required to mitigate the consequences of any design basis accident considered in the FSAR. (Hoch/Crawford Testimony ff. Tr. 11590, p. 4; Jensen Testimony ff. Tr. 11621, pp. 9, 12, 14)

374. A safety-related function of the PORV's is to protect against low-temperature overpressurization. The two safety-grade PORV's perform that function, and operators are trained to use the appropriate valves when the reactor is at low temperature. (Crawford, Tr. 11607; Patterson, Tr. 11607)

VII. CONCLUSIONS OF LAW

The Board has considered the entire record in this proceeding and concludes as follows:

1. Onsite emergency preparedness for Diablo Canyon, Units 1 and 2, provides assurance that effective protective measures can and will be taken in the event of a radiological emergency.

2. The onsite emergency response plan for Diablo Canyon, Units 1 and 2, meets the requirements of emergency planning standards of Section 50.47(b) and Appendix E of 10 CFR Part 50.

3. In accordance with the Commission Regulations and practices, only the systems and components which perform the critical safety functions set forth in Section III.C of Appendix A to 10 CFR Part 100 need be classified as "safety-related."

4. The pressurizer heaters at Diablo Canyon do not perform any of the critical safety functions stated in Section III.C of Appendix A to 10 CFR Part 100 and need not, therefore, be classified as safety-related.

5. The block valves at Diablo Canyon do not perform any of the critical safety functions listed in Section III.C of Appendix A to 10 CFR Part 100 and need not, therefore, be classified as safety-related.

6. The PORV's at Diablo Canyon perform only one safety function, that of low-temperature overpressurization. Two of the PORV's are qualified to safety-grade standards; the other PORV, which is provided to allow full load rejection

without reactor trip, is qualified safety-grade in all aspects except for an independent control mechanism.

7. Contentions 10 and 12 fail to raise an issue requiring a change in the classification of the pressurizer heaters, block valves or PORV's.

8. The activities authorized by this license can be conducted without endangering the health and safety of the public, insofar as the issues discussed herein are concerned.

9. The issuance of this license will not be inimical to the common defense and security or to the health and safety of the public.

10. The following conditions are to be met before the full-power license is issued:

- (a) The Director of Nuclear Reactor Regulation shall verify that the 12 deficiencies in the San Luis Obispo County emergency plan which have been noted by FEMA have been corrected.³¹
- (b) The Director of Nuclear Reactor Regulation shall obtain a written acquiescence by the appropriate State jurisdiction binding them to participate in those Standard Operating Procedures required to be followed by Federal Regulations.
- (c) The Director of Nuclear Reactor Regulation must secure FEMA findings on the adequacy of the State Emergency Response Plan.
- (d) The Director of Nuclear Reactor Regulation must verify that tone alerts or equivalent warning devices are operational in schools, hospitals and other institutions.

It is ORDERED, in accordance with the Atomic Energy Act of 1954, as amended, and the Commission's regulations, and based on the findings and conclusions set forth herein, that the Director of Nuclear Reactor Regulation is authorized to issue a full-power operating license for the Diablo Canyon Nuclear Plant, Units 1 and 2, consistent with the Board's decisions in this case, subject to the Commission's determination and order.

It is further ORDERED, in accordance with Sections 2.760, 2.762, 2.764, 2.785 and 2.786 of the Commission's Rules of Practice, that this Initial Decision shall not become effective until 30 days from the date that this Decision is transmitted to the Commission and shall constitute the final action of the Commission subject to review thereof under the above-cited rules.

Exceptions to this Initial Decision may be filed by any party within 10 days after service of this Initial Decision. A brief in support of the exceptions shall be filed within 30 days thereafter (40 days in the case of the Staff). Within 30 days after the service of this brief of the appellant (40 days in the case of the Staff), any other party may file a brief in support of, or in opposition to, the exceptions.

³¹ An itemized list of the 12 deficiencies as noted by FEMA is attached hereto as Appendix A.

This Opinion and Order is issued with a caveat. It does not, nor is it intended to, impinge in any way on the status of the Commission's suspension of the Diablo Canyon Plant's low-power license (CLI-81-30, 14 NRC 950 (1981)) or on the independent design verification program ordered by the Commission (*id.*, at 955, 958).

THE ATOMIC SAFETY AND
LICENSING BOARD

Glenn O. Bright
ADMINISTRATIVE JUDGE

Dr. Jerry Kline
ADMINISTRATIVE JUDGE

I do not join in those parts of the Board's Decision which relate to Contention 1 since they appear to me to be unacceptably prolix. However, I concur in the Board's conclusion that the issues raised by the Intervenors regarding the emergency plan were not proved in the record. I concur on the basis of the entire record that the Applicant's and the combined onsite, State and local emergency response plans and preparedness do comply with 10 CFR 50.33(g), 50.47 and revised Appendix E to Part 50.

I also concur in the Decision in so far as it relates to the remaining contentions, i.e., 10: Pressurizer Heaters and 12: Block and Power-Operated Relief Valves.

John F. Wolf, Chairman
ADMINISTRATIVE JUDGE

Issued and entered at Bethesda, Maryland,
this 31st day of August 1982.

APPENDIX A

Corrective Actions Recommended by FEMA

Standard E

1. The technical specifications for design and maintenance of the proposed warning system should be submitted for preliminary review and approval by FEMA.

2. Pagers should be provided for alerting key County response personnel.

3. A reliable communications link consisting of both a two-way radio capability and a dedicated telephone line must be established between the EOC and the two Emergency Broadcast System stations. Communications lines to both radio station KVEC and radio station KSLY are required in order to provide full 24-hour coverage. Also, an agreement between the two radio stations and San Luis Obispo County regarding dissemination of emergency instructions to the public needs to be formulated.

4. The public warning system must be completed and operational in accordance with the NRC established deadline.

Standard F

5. The County radiological monitoring team members should be supplied with radios to establish a direct communications link to the County Unified Dose Assessment Center Supervisor.

Standard G

6. The public information program required under this planning objective must be carried out to ensure that emergency response instructions are made available to both resident and transient populations.

Standard H

7. The additional telephone capability needed for operations in the EOC should be established and those lines should be installed.

8. The EOC should have a backup power source to ensure continuing operations under conditions of a commercial power failure.

9. Develop and install a system that will allow the cities involved in the plume exposure zone to be kept informed of the developing situation from the EOC.

Standard K

10. Provisions must be made for the distribution of dosimeters, both self-reading and permanent record devices, to emergency workers. This equipment should be permanently located in the County.

Standard N

11. The annual drill and training schedule for the County should be established and activities under that schedule begun.

Standard O

12. Same as Standard N.

APPENDIX B

Exhibits

State's Exhibit No. and Title	Received in Evidence
7. SOP Development Status Report	Tr. 12110
8. State of California, Office of Emergency Services, "Emergency Planning Zone for Serious Nuclear Power Accidents," November 1980	Tr. 12522
9. Transmittal Ogden to Ness	Tr. 12553
10. County of San Luis Obispo, Department of Technical Services Five-Year Communication Plan, January 1982	Tr. 12685

Staff's Exhibit No. and Title

26. Quick Look Report for Semiscale, July 1981	Tr. 11623
27. Experiment Data Report for LOFT, August 1980, NUREG-CR-157	Tr. 11625
28. Report of Small Break Accident for Westinghouse NSSS System, Vol. III, Sec. 3.3	Tr. 11629
29. Report of Small Break Accidents for Westinghouse NSSS System, Vol. III, Sec. 4.2.	Tr. 11630
30. Letter from Philip Crane to R. H. Engelken, January 13, 1982	Tr. 12569

31.	SSER 15, October 22, 1981	Tr. 11973
32.	Letter to F. Miraglia, Jr., Office of P. A. Crane, Jr., October 22, 1981	Tr. 11981
33.	Letter to Mitzie Solberg from T. Urbanik, II, October 28, 1981	Tr. 11378
34.	Letter from L. H. Munson to J. Sears, December 28, 1981, with attachment	Tr. 12648
35.	Memo for B. Grimes from R. Krimm, December 29, 1981	Tr. 12695

Joint Intervenors' Exhibit No. and Title

119.	Memo from J. Allen to N. Moseley, October 16, 1979	Tr. 11636
120.	Applicant PG&E's response to Joint Intervenors First Set of Interrogatories	Tr. 11793
121.	FEMA Guidance Memo #19	Tr. 12703
122.	Letter to Board of Supervisors of San Luis Obispo County from M. Billig, January 13, 1982	Tr. 12255
123.	Letter to Santos Arrona from C. Dahle, December 11, 1981	Tr. 12481
124.	Memo from M. F. Reed, September 17, 1981	Tr. 12500
125.	Letter to A. Cunningham from C. Palumbo, July 2, 1981	Tr. 12714
126.	Memo for Record from J. Eldridge, December 8, 1980	Tr. 12716
127.	FEMA Memos Dated September 9, 1981 and October 21, 1981, for T. Knight, J. L. Dehorty, etc.	Tr. 12718

Applicant's Exhibit No. and Title

70.	Document Entitled "Emergency Shutdown"	Tr. 11683
71.	Document Entitled "Reactor Trip With Safety Injection"	Tr. 11683
72.	Document Entitled "Emergency Operating Procedure — Loss of Electrical Power"	Tr. 11684
73.	Rev. 3 — Diablo Canyon Power Plant Emergency Plan	Tr. 11765
74.	Diablo Canyon — Emergency Procedures, Vol. 3A	Tr. 11765
74A.	Diablo Canyon — Emergency Procedures, Vol. 3B	Tr. 11765
75.	Diablo Canyon — Emergency Procedures as revised through January 15, 1982, Vol. 3A	Tr. 11765

Applicant's Exhibit No. and Title

75A.	Diablo Canyon — Emergency Procedures as revised through January 15, 1982, Vol. 3B	Tr. 11765
76.	Procedures EP-CAP-1, EP RB7, EP RB8 and EPG-1	Tr. 11765
77.	PG&E Corporate Emergency Response Plan, Appendix A, Rev. 1, May 11, 1981	Tr. 12087
78.	Evacuation Times Assessment for Diablo Canyon, September 1980	Tr. 11765
79.	for identification, Earthquake Emergency Planning at Diablo, Vol. 1	_____
79A.	for identification, Earthquake Emergency Planning at Diablo, Vol. 2	_____
79B.	for identification, Earthquake Emergency Planning at Diablo, Vol. 3	_____
80.	San Luis Obispo County Nuclear Power Plant Emergency Response Plan, Draft Plan, Rev. B, Parts I, II, IV, V, October 1981	Tr. 11765
80A.	for identification, Transmittal from T. Ogden to T. Ness, November 17, 1981	_____
81.	San Luis Obispo County, Cities Nuclear Power Plant Emergency Response Plan, Part III (Part I), December 1981, (Draft)	Tr. 11765
81A.	Same as 81, Part III (Part 2)	Tr. 11765
82.	Emergency Plan & Operation Manual for Radiological Health Section of California Department of Health Services, Annex 2, Vol. I, August 1981	Tr. 11765
82A.	RHS Emergency Plan — Implementing Procedures, Annex 2, Vol. II (files, maps)	Tr. 11765
83.	Diablo Canyon Emergency Response Drill, August 1981 (videotape)	Tr. 11881
84.	Evacuation Time Estimates	Tr. 12190
85.	Response to J. I. Interrogatory 9, (First Set), January 21, 1982	Tr. 12772

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF EXECUTIVE DIRECTOR FOR OPERATIONS

William J. Dircks, Executive Director for Operations

In the matter of

Docket No. PRM-95-1
(10 CFR Part 95)

GENERAL ATOMIC COMPANY

August 26, 1982

The Nuclear Regulatory Commission is hereby denying a petition for rulemaking submitted by the General Atomic Company (GAC) in a letter to the Secretary of the Commission dated May 19, 1981. The petition requested that the Commission amend its regulation relating to the classification guidance provided by sub-topic 112 of Appendix A, "Classification Guide for Safeguards Information," to 10 CFR Part 95 to change the CONFIDENTIAL-National Security Information (CNSI) classification category to unclassified (U) or to delete sub-topic 112 from Appendix A.

DENIAL OF PETITION FOR RULEMAKING

On March 5, 1980, the Nuclear Regulatory Commission published, as a final rule, 10 CFR Part 95, "Security Facility Approval and Safeguarding of National Security Information and Restricted Data" (45 *Fed. Reg.* 14483). On August 4, 1981, the NRC published for comment a petition for rulemaking by the General Atomic Company (GAC) that requested a change to or deletion of sub-topic 112 of Appendix A to Part 95 (46 *Fed. Reg.* 39610). No public comments were received on the GAC petition.

Appendix A to Part 95, which is the "NRC Classification Guide for Safeguards Information," provides security classification guidance for safeguarding information about certain nuclear material or facilities. Sub-topic 112 of Appendix A requires the classification of "Total quantities at any given time of SSNM by

designated vault and vault-type storage areas." GAC in their petition requested that either the classification of sub-topic 112 type information be changed from classified CONFIDENTIAL-National Security Information (CNSI) to unclassified (U) or that sub-topic 112 be removed from Appendix A.

The NRC in reviewing and evaluating GAC's petition has concluded that sub-topic 112 of Appendix A provides for proper classification guidance to ensure that information of this type is protected to minimize or prevent acts of theft or diversion of formula quantities of SSNM, and information that could enhance the credibility or frequency of threats made against nuclear facilities. The NRC does not agree with the GAC contention that: "1) There is only a remote possibility that an adversary would base his or her action upon the availability of specific data about a vault's momentary contents; and 2) the general availability of unclassified information . . . makes the time dependent vault total a secondary factor in attack planning by would be adversaries." Specifically, since: 1) an adversary may base his or her actions on the vault's momentary contents, if the action contemplated was intended to enhance the credibility of a nuclear threat, and 2) a vault can always be expected to be a principal target for an adversary, and knowing the quantity of material contained therein may make it a more attractive target.

Incidents such as theft and threats can cause identifiable damage to the national security and, therefore, information that could assist an adversary in planning such actions must be protected. Sub-topic 112, when standing alone, may appear unduly restrictive and unnecessary; however, the correlation of this sub-topic with sub-topics of Section 200 (*e.g.*, 212, 221, 222, 224, 261, 262, 263 and 264), provides assurance that information related to the physical protection of formula quantities of SSNM that could cause damage to the national security is protected.

The NRC has expended a considerable amount of resources studying and evaluating this concern both prior to and after receipt of the GAC petition, and after careful review and consideration has concluded that the classification guidance provided by sub-topic 112 shall not be deleted from Appendix A. The NRC bases this position on the fact that the information classified by sub-topic 112 is information that could facilitate carrying out a successful: 1) theft or diversion of formula quantities of nonself-protecting strategic special nuclear Material (SSNM), or 2) sabotage mission against any facility or activity involving formula quantities of nonself-protecting SSNM.

This denial is being issued by the Executive Director for Operations based on authority delegated to him by the Commission.

For the Nuclear Regulatory
Commission

William J. Dircks
Executive Director for Operations

Dated at Bethesda, Maryland,
this 26th day of August, 1982.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gillinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of

Docket Nos. 50-247
50-286

CONSOLIDATED EDISON COMPANY OF
NEW YORK
(Indian Point, Unit 2)

POWER AUTHORITY OF THE STATE OF
NEW YORK
(Indian Point, Unit 3)

September 15, 1982

Following the resignation of the Chairman of the Licensing Board for this special proceeding, the Commission, pursuant to 10 CFR 2.721(b), by a 3-2 vote, reconstitutes the Licensing Board.

ORDER

The Commission's Order of September 18, 1981, CLI-81-23, appointed an Atomic Safety and Licensing Board to preside over the special proceeding concerning Indian Point Units 2 and 3 which was initiated by the Commission's Order of May 30, 1980. On September 1, 1982, Louis J. Carter, Chairman of that Licensing Board, notified the Commission of his resignation as Chairman and as a member of the Atomic Safety and Licensing Board Panel. There is therefore a vacancy on the Licensing Board in this proceeding.

Pursuant to 10 CFR 2.721(b) the Commission, by a 3-2 vote, with Commissioners Gilinsky and Asselstine dissenting, has reconstituted the Atomic Safety and Licensing Board for this proceeding. As reconstituted, the Licensing Board will consist of the following members:

James P. Gleason, Chairman
Oscar H. Paris
Frederick J. Shon

It is so ORDERED.

For the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 15th day of September, 1982.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gillinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of

Docket Nos. 50-247
50-286

CONSOLIDATED EDISON COMPANY OF
NEW YORK
(Indian Point, Unit 2)

POWER AUTHORITY OF THE STATE OF
NEW YORK
(Indian Point, Unit 3)

September 17, 1982

The Commission responds to several questions certified to it by the Licensing Board that seek clarification of previous guidance provided by the Commission on the conduct of this special proceeding.

ORDER

The Commission issued a Memorandum and Order on July 27, 1982 offering guidance to the Licensing Board in this special proceeding. CLI-82-15, 16 NRC 27. The Board has now certified several questions to the Commission regarding its intent in issuing that Memorandum and Order and the future course of the proceeding in light of recent developments in emergency planning. Memorandum and Certification, LBP-82-61, 16 NRC 560 (1982) (hereinafter "Board Order"). Those questions are as follows:

- 1a. Must each witness's testimony address both consequences and probabilities, or must each party address both factors in its direct case?
- 1b. Alternatively, may we hear a combination of consequence and probability testimony taken from different sources, e.g., from the testimony of witnesses presented by different parties, or from cross-examination?
- 2a. Shall we continue to hear evidence on the "status and degree of conformance with NRC/FEMA guidelines" aspect of Question 3 and the "improvements in the level of emergency planning" and "time schedule" aspects of Commission Question 4?
- 2b. If we limit our proceeding to the "minimum hours warning" aspect of Question 3 and the "other specific offsite emergency procedures" aspect of Question 4, should we investigate those matters as they are now or as they are expected to be in four months?

Board Order at 563-64 [footnotes omitted].

Questions 1a and 1b are motivated, the Board tells the Commission, by a concern that its order might mean that only those witnesses who can qualify as experts in multiple and diverse fields can testify on accident risks. That was not the Commission's intention. It intended that *each party* (or each *group of parties consolidated by the Board*¹) be required to include in any direct testimony and related contentions (and underlying bases) that it may choose to file on accident consequences a discussion of the probability of the accidents leading to the alleged consequences. It is clearly not sufficient for a party offering testimony and contentions on consequences to rely on other parties to develop the issue of probability. Each party offering testimony on consequences must offer at least a discussion of probability for the Indian Point plants. That discussion may be based on information which was developed by another party, including the Staff or licensee.² Because it was necessary for the Commission to reiterate its guidance after the hearing had commenced, the Board can allow any testimony already heard to remain in the record. However, for any already accepted testimony on consequences the Board itself is directed to develop the necessary linkage to accident probabilities for the *Indian Point plants* to ensure the testimony is useful to the Commission in assessing risk. For any testimony not yet heard, the Board is directed to require a *discussion* of the probability of the accident sequence for the Indian Point reactors that will lead to the consequences to be discussed.

In 1980 the NRC Staff did a preliminary risk analysis for the Indian Point plants. The Staff concluded that, compared with other U.S. operating nuclear power plants, the consequences of an accident at Indian Point would be about an order of

¹ See 10 CFR 2.715a.

² That information should be available to parties before the hearing through discovery. It should be available in the record through either direct testimony or cross-examination (e.g., for assumptions, calculations and other information underlying the direct testimony).

magnitude greater but that the probability of an accident was about an order of magnitude less. Thus the risks were comparable. However, in its Order of January 8, 1981, the Commission stated that the risk analysis report was to be "tested in an adjudicatory setting where parties may present additional or rebuttal evidence." CLI-81-1, 13 NRC 1, 5. This hearing was to be focused on the *risk* of the Indian Point plants compared with that for other U.S. plants. In the past, those opposed to operating plants have criticized the NRC Staff's probability estimates, while themselves merely discussing consequences. There is substantially less controversy over the consequences than the probabilities. Thus, in this hearing, the real focus should be on the probabilities. Since the consequences are a function of what is released, the risk will be directly affected by the probabilities of release.

A party providing testimony on consequences must provide at least some discussion of probability. The probability discussion should be at least as detailed as the consequences discussion so that risk can be discussed in the same level of detail. We would anticipate that the Board would in its discretion give varying weight to testimony depending on its level of detail.

Turning to Questions 2a and 2b, the Board notes that the NRC Staff has started the "120-day clock" pursuant to 10 CFR §50.54(s)(2)(ii) as a result of a July 30, 1982 report by FEMA in which FEMA found deficiencies in the Indian Point emergency plan. Board Order at 16 NRC 563-64. In light of this development, and based upon the Commission's perception that to hear testimony regarding what is likely to be a rapidly changing situation would be wasteful of the time and resources of the Board and the parties, the Commission believes that the Board can (after reconsidering its rulings on the contentions and completing any necessary prehearing matters) proceed first to take evidence on Commission questions 1, 2, 5, 6 and 7. Then the Board can take evidence on questions 3 and 4 under the Commission guidance previously provided. If the concerns that prompted the Board to certify questions 2a and 2b remain at the conclusion of the testimony on these other Commission questions (*i.e.*, questions 1, 2, 5, 6 and 7), the Board can return to the Commission for further guidance if needed. The Commission recognizes that evidence on plant risks (in particular questions 1 and 5) may depend to some extent on assumed levels of emergency response. However, it believes that the parties can present testimony concerning accident risks based on *assumptions* as to ranges of emergency responses. Any disputes as to the feasibility or likelihood of particular emergency response testimonial assumptions can be either addressed expeditiously without inquiring into details of questions 3 and 4 or postponed until questions 3 and 4 are addressed on their merits.

The Commission has received comments on the certified questions from various participants in the proceeding and a request by the Union of Concerned Scientists, the New York Public Interest Research Group, Friends of the Earth, Inc., The New York City Audubon Society, Parents Concerned About Indian Point, West Branch

Conservation Association, Westchester Peoples Action Coalition, and Dean Corren that they be afforded an opportunity to address the Commission orally regarding the questions. The Commission has considered these comments in making its final decision and does not believe that oral presentations at this time would be useful. Accordingly, the request for oral presentations is denied.

Commissioners Gilinsky and Asseltine dissent from this Order. The separate views of all Commissioners are attached.

It is so ORDERED.

For the Commission,

S.S.

SAMUEL J. CHILK

Secretary of the Commission

Dated at Washington, D.C.,
this 17th day of September, 1982.

SEPARATE VIEWS OF CHAIRMAN PALLADINO

I believe that the Commission is *not* requiring that each party provide witnesses able to present and support independently its case on probability. In my opinion, that is not what the Commission order says and that is not what I intended. In preparing testimony, a party will have access, through discovery and through testimony and cross-examination from any earlier hearing sessions, to information developed by the other parties. Its discussion of probability may rely on that information. I expect that information which has been obtained through discovery and which is not in the record at the time of such discussion will become a part of the record when the other party presents its witnesses and those witnesses are cross-examined. As the order provides, each party that addresses consequences must include a *discussion* of the probability of the accident sequences at the Indian Point plants leading to the alleged consequences.

ADDITIONAL VIEWS OF COMMISSIONER AHEARNE

When it comes to intent, I can speak only for myself. Over the last two years there have been seven Commissioners involved in writing numerous Indian Point

orders. Each will have to vouch for his own private thoughts. However, I have participated in Commission discussions from the very beginning and have been a part of the majority in each case.

My own objectives, and the Commission's objectives as I understand them, have remained unchanged. The purpose of the proceeding was to gather information which would help the Commissioners assess the risk at Indian Point in light of the population density issue and compare it to risk at other plants. We wanted further information on a very specific area, not a wide ranging discussion of the Indian Point plants.

The measure of risk is a combination of probability and consequences. A discussion of consequences alone is not helpful. I believe we all recognize that release of a very large amount of radiation on Manhattan is a catastrophe. That is not the issue. In assessing release situations that are going to lead to major consequences, we need an integrated discussion of the accident sequences that lead to those releases, the likelihood of those sequences, and then the consequences. This is why, in explaining the very first question which dealt with risk, the Commission directed "Attention shall be given both the probability of occurrences of releases and to the environmental consequences of such releases. . . . Thus, a description of a release scenario must include a discussion of the probability of such a release for the specific Indian Point plants."¹

The Commissioners recognized that some parties might face limited capabilities in this area. That is why we specifically chose the word "discussion" rather than "calculation" or "estimate."² It was clearly not our intent to require each party to come with a battery of specialists in support of a full blown probabilistic risk assessment. It does mean testimony should address the issue of probability and there should be *some* basis for any assumptions made.

In answer to the charge that I would require intervenors to send great armies into the field to do calculations, this order makes clear intervenors may use Staff or licensee studies — with the proviso they be for Indian Point, rather than for reactors in general. When someone argues that consequences of accidents should dominate judgment about operation of the Indian Point plants, that person at least must give attention to the probability of those consequences.

Thus, if the consequence presentation is described as "very large," then the probability discussion can also use general terms. If the consequence testimony gets to the level of detail of "1500 fatalities in the first 4 hours due to close to a 400 rem dose being received at 20 miles," then the probability discussion should include information such as "the probability is 10^{-5} for 400 rem to be deposited at 20 miles," with either the calculation or the reference given. I would expect the

¹ "Memorandum and Order," CLI-81-23, 14 NRC 610, 612 (1981).

² Tr. 11-14 (September 18, 1981) (Commission meeting to discuss language in CLI-81-23).

Board to be much more demanding of a nuclear engineer or physicist witness — a person who has been trained in technical calculations — than of a non-technical witness.

Some argue the hearing should serve as an educational process. If so, I believe it would be very educational for those who in the past have only talked about consequences to be forced to look at probabilities of release, just as it is also useful for those who only deal in probabilities of release to be forced to consider consequences.

Testimony on emergency planning involves a distinct set of questions. As I understand it the Commission intended to allow testimony concerning emergency planning within ten miles (the plume exposure emergency planning zone) without any specific link to risk or population density. In order to discuss planning beyond ten miles, a party was obligated to relate its proposed discussion to the risks posed by the Indian Point plants.³

However, it is necessary to keep the basic objective in mind. The intent was to obtain information which would be helpful in evaluating the risk at Indian Point, not to determine and enforce compliance with the emergency planning regulations. Compliance with the regulations is being addressed through a separate, hopefully much faster, process. Since the basic objective is to provide information which the Commissioners can consider in evaluating risk, it is appropriate that we attempt to have information which will be most useful for that consideration. It will be of little use to us if the information we receive is clearly outdated. Since the status of emergency planning appears to be changing more rapidly than other areas of interest, it makes sense to me to take testimony on emergency planning last. Testimony in other areas will not become dated as quickly, and we will have the benefit of more accurate information on emergency planning.

Finally, I would like to make it clear that in developing and supporting the recent Commission direction to the Licensing Board, my objective was to address the Licensing Board's general interpretation of the Commission's ground rules rather than to achieve a particular result with respect to specific contentions or testimony. Based largely on discussion in the Board's orders, I did not believe it was using the basic framework the Commission tried to establish.

I obviously disagree with Commissioner Gilinsky's characterizations of the Commission's motivation in taking action as well as his interpretations of the intended consequences of these actions. In addition, I note the referenced ACRS discussion had no direct and only slight indirect application to the probability issue involved here. The interested reader definitely should refer to the transcript of the ACRS discussion rather than accepting the view of either Commissioner.

³ See Question 3; cf. 50.47(c)(2).

I agree with the description of the Commission process as indicated by Commissioner Roberts. I also concur in Chairman Palladino's views.

ADDITIONAL VIEWS OF COMMISSIONER ROBERTS

Administrative Judge Louis J. Carter resigned from the Atomic Safety and Licensing Board Panel, stating that the Commission does not "share his concern for the processes which regulate the resolution of these matters." To the contrary, due to my concern that the Board apparently did not understand the task assigned to it and had changed the nature of the Indian Point proceeding from that established by the Commission, I voted for the July 27 order. That order restated earlier Commission guidance and ordered the Board to review expeditiously its orders and actions so as to make them consistent with Commission guidance. A little background will explain the Commission's action, and hopefully improve the understanding of the nature of this hearing.

In May 1980, the Commission decided to respond to the Union of Concerned Scientists (UCS) petition to suspend operation at Indian Point Units 2 and 3 by holding a trial-type hearing on *specific* Commission questions regarding Indian Point. The proceeding is to investigate UCS's assertions that Units 2 and 3 should be closed due to the density of nearby population. Specifically, the Commission wanted parties to address the question of how the risk posed by Indian Point Units 2 and 3 compared with the range of risks posed by other nuclear power plants licensed by the NRC.

Subsequently, the Commission concluded that Units 2 and 3 should continue to operate during the hearing. This decision was based, in part, on the conclusion of a Task Force formed by the Commission to determine the comparative risk of interim operation of Units 2 and 3. The Task Force concluded that the overall risk of the Indian Point reactors is about the same as that of a typical reactor on a typical site. In the order authorizing continued operation, the Commission again explicitly stated that the primary concern to be addressed in the hearing was the extent to which the population around Indian Point affects the risk posed by Indian Point as compared to the spectrum of risk posed by other nuclear power plants. Further, the Commission explained its interest in emergency planning in the vicinity of the plant. It indicated that the difficulty of evacuation in an emergency is a component of the risk to individuals.

Before the proceeding began, the Commission issued a third order clarifying its intent. It emphasized that the Board was to conduct a focused proceeding and that the Board was empowered to accept *only* those contentions which seemed likely to be important in resolving the Commission's questions. Because the proceeding is to focus on the risk of operation of Units 2 and 3 in light of population density, the

Commission required parties to discuss the probability of a particular accident as well as the consequences. Risk is defined not only as consequences, but also as the probability that those consequences will be realized. Because the Commission concluded that requiring parties to do calculations or estimates of risk would be too difficult, it merely required a *discussion* of probability. The NRC Staff had already imposed requirements on Units 2 and 3 at the time it responded to the UCS petition. Thus, the Commission required parties alleging that additional safety measures were necessary to state why the additional measures would result in a significant reduction in risk.

When the Board issued its order setting out the contentions to be litigated in the proceeding, I became aware that the Board apparently had not understood Commission guidance. My concern arose from Board statements that although it was mindful of the Commission's instruction to conduct a focused proceeding, the Board believed it should not limit its investigation by imposing "inflexible legal standards." The Board admitted several contentions that were so broad as not to address specifically Commission concerns and admitted others that were peripheral. Additionally, the Board admitted contentions alleging severe consequences without even requiring a discussion of the probability of such consequences.

Given the Commission's conclusion that the Board was not implementing its prior guidance, the Commission undertook to clarify once more its directions. While recognizing the imminence of the hearing, we also recognized the special nature of this proceeding. It is one which did not arise automatically under the Atomic Energy Act but was specially created by the Commission to address specific Commission concerns. In these circumstances, I believed the Commission was duty-bound to explain once again what it meant and to correct the course of the proceeding.

There has been a perception by some that the Commission has changed the ground rules of the proceeding or has been unfair. The Commission has done neither. It merely repeated what has to be done in the hearing. In its January 1981 order, the Commission stated that it would reach a final decision on the UCS petition by comparing the risk of Indian Point to the spectrum of risks posed by other licensed nuclear power plants. It is in the interests of all parties, the Board and the Commission that this issue be the focus of the Indian Point hearing, and that these hearings proceed to an expeditious conclusion.

I agree with Commissioner Ahearne's explanation of Commission intent underlying its July 27 Order and defer to his personal recollections of Commission intent regarding emergency planning as these discussions were conducted before I joined the Commission.

I also agree with Chairman Palladino's views.

SEPARATE VIEWS OF COMMISSIONER GILINSKY

I agree with Commissioner Asselstine's opinion that the Commission's further guidance to the Indian Point Board, contained in today's Order, is erroneous, improper, and probably self-defeating. I would only add a few words about the first part of the Commission's Order which fundamentally misrepresents the Commission's original intent in launching this proceeding.

When it set up this fact-finding proceeding, the Commission instructed the hearing board to evaluate both the probabilities and consequences of accidents at the Indian Point plants. The Commission majority now claims that this instruction applies to each party. They now propose to reject the future testimony (and perhaps past testimony) on accident consequences provided by parties which are not prepared or equipped to testify also on accident probabilities. Such a restriction is unprecedented in our hearings. Moreover, it is inconsistent with getting all the relevant facts, and it betrays an unseemly eagerness to be rid of these parties.

Because of the vagueness of today's Order, it is difficult to discern what the Commission's new requirement will amount to in practice. If it can be satisfied by a passing reference to another party's testimony on the probability of accidents, this new requirement will be no more than an irritant. (Although, in the process of imposing this requirement, the Commission succeeded in shaking up the membership of a hearing board which seemed to the Commission majority to be too generous to the public participants.) If, however, the Order is interpreted literally, this requirement may well eliminate some of the parties from the hearing.¹ The Commission would thereby lose the benefit of testimony from some of the parties which are most knowledgeable about local conditions. In either event, the Commission's actions will mire this case in endless disputes about precisely how much testimony on probabilities is required and whether a party has satisfied this test.

The majority's decision to impose this burden on the intervenors cannot be justified either on the basis of logic or common sense. A party testifying on accident consequences would gain no advantage by not filing testimony on the likelihood of accidents. In the absence of such testimony, the Board would rely, to a greater extent than otherwise, on the evidence of the licensees and NRC Staff, which is likely to be unfavorable to the intervenors.

Interestingly, the majority has taken the position that the Order does not require a party which is prepared to testify only about probabilities to also sponsor testimony about consequences. Apparently, the majority would be pleased to have

¹ The majority has attempted to modify this aspect of the Order by having two Commissioners agree with the separate views of the Chairman on the sort of "discussion" of probability which each party will be required to produce. As these views are internally inconsistent, the majority succeeds only in confusing matters further. In any event, this modification is of no legal significance since a Commission Order cannot be modified without a formal vote of the Commission.

someone bring them good news on low probabilities without dwelling on unpleasant consequences. The Commission has gone so far as to say this hearing is mainly about the probabilities of reactor accidents at Indian Point rather than about the potential consequences off-site. This completes the process of standing the Indian Point hearing on its head.²

What in fact makes the Indian Point site stand out, and what led to this hearing, is that the surrounding area is very densely populated and that it is close to New York City. The question which the Commission must answer is whether the consequences of a serious accident — in terms of lives and property — may be so large that, even taking into account reasonable estimates of the likelihood of such consequences, steps beyond those currently contemplated in our regulations need to be taken. That is what the hearing should be about.³

Finally, I strongly agree with Commissioner Asselstine that the Commission's refusal to hear from the parties prior to affirming this Order will further undermine public confidence in the fairness of our proceedings. This Commission's majority loses no opportunity to confirm the worst fears of its critics.

DISSENTING OPINION OF COMMISSIONER ASSELSTINE

Before turning to my specific objections to the Commission majority's responses to the Board's questions, a few general observations about the present status of this proceeding appear to be in order. The Commission majority, in defense of this order and of its July 27, 1982 order (CLI-82-15), steadfastly maintains that it is only reiterating the guidance given to the Board in the Commission's earlier orders in this proceeding. This assertion is simply incorrect.

In its July 27, 1982 order, the Commission majority decided to impose at this late stage of the proceeding a number of stringent legal restrictions on the continued participation of parties in the proceeding. The burden of these restrictions fell almost entirely on the public participants in this proceeding. These restrictions included, among other things, the following:

² The Commission's discussion of this Order makes me wonder whether the Commission majority understands that a probabilistic analysis of a nuclear power plant can, at best, yield only a very rough indication of the overall likelihood of a serious accident. Because of the lack of sufficient operational data, probabilistic analysis involves a lot of educated guesswork. As a result, wide error bands attach to the various parts of the analysis. When such uncertainty factors are compounded in a long chain of events the final result is very mushy — as we have just been informed by our advisory committee. (See transcript of the meeting of the ACRS with NRC Commissioners, September 10, 1982, particularly pp. 24-30.)

³ I would have preferred at the outset of this inquiry to adopt a rule defining the criteria to be applied to high population density sites. This proceeding could then have focused on whether Indian Point met the requirements of the rule. Unfortunately, the Commission decided to do otherwise, apparently because it feared delay.

- (1) a requirement that before admitting contentions addressing the second Commission question, the Board must make a threshold finding for each such contention, based upon written material submitted by the proponent of the contention, that (a) there exists a significant risk to public health and safety, notwithstanding measures already imposed by NRC, and (b) the additional proposed measures would result in a significant reduction in that risk;
- (2) a requirement that the Board now require a statement of the bases for each contention in order for the contention to continue to be admitted;
- (3) a requirement that the Board determine for each contention, prior to admitting the contention, whether the contention will contribute materially to the resolution of the Commission's questions and what time and resources will be required to address the contention;
- (4) restrictions on the extent to which the Board may accept contentions that include challenges to the Commission's regulations; and
- (5) a requirement that a party seeking to present testimony on the consequences of an accident scenario at the Indian Point plant must also present its own *affirmative case* detailing the probability that the accident scenario will occur.

I continue to believe that the imposition of these new restrictions constitutes a radical and unjustified departure from the ground rules for this proceeding that were established in the Commission's January 8, 1981 (CLI-81-1) and September 18, 1981 (CLI-81-23) orders. Contrary to the assertions of the majority, none of these new restrictions can be found in the Commission's previous orders in this proceeding.

Individual Commissioners may well have intended from the outset of this proceeding that one or more of these restrictions apply. If so, they failed to incorporate that intent in the Commission's previous orders. As our regulations make clear, the Commission's orders must remain the exclusive and definitive source of guidance on the Commission's intent. See 10 CFR section 9.103. In this case, I believe that a fair reading of the Commission's previous orders can only lead to the conclusion that the Commission majority is now changing the rules in mid-stream.

Predictably, the Commission majority's actions have created a storm of controversy surrounding this proceeding. In addition, they have resulted in the resignation of the Chairman of the Indian Point Board, a distinguished and well-respected member of our Atomic Safety and Licensing Board Panel. At present, the Indian Point proceeding is at a standstill; it is unclear when the hearing will resume and it is even more uncertain when this proceeding will reach a conclusion.

Perhaps in an effort to blunt the criticism now directed at the Commission and to spare the remaining members and a new Chairman of the Indian Point Board the

acute embarrassment of having to reject immediately large portions of the testimony already submitted by the public participants, the Commission majority has agreed in this order to a small concession regarding the continued admissibility of testimony already submitted to the Board on accident consequences. Although this action by the majority is a step in the right direction, I fear that it will do little to moderate the serious adverse impact of the majority's July 27 order on the ability of the public participants to participate meaningfully in this proceeding. Indeed, one need look no further than the September 1, 1982 Comments to the Board by the Power Authority of the State of New York regarding the Commission's order to reformulate contentions — a document that calls upon the Board to strike most, if not all, of the contentions already admitted in this proceeding — to see where this proceeding may be heading.

1. Probability and Consequence Testimony

I am not participating in the Commission decision on the Board's questions (questions 1a. and 1b.) regarding probability and consequence testimony. Those questions address the need for clarification of the majority's ruling on contentions contained in the Commission's July 27, 1982, order in this proceeding — a ruling that I dissented from at the time.

I continue to believe that the Board's inherent supervisory authority over the conduct of this proceeding is sufficient to assure a complete record that includes evidence on both the probability and consequences of postulated accident scenarios. In that regard, I see no justification for the majority's holding in this order that a party seeking to offer testimony and contentions on consequences may not rely on the probability testimony, including cross-examination, or contentions and bases of another non-consolidated party. The use of cross-examination by intervenors to establish their case on contentions is a practice long embedded in our adjudicatory proceedings, and I see no reasonable basis for rejecting that practice in this proceeding.

2. Emergency Planning

I do not agree with the majority's response to the Board's questions (questions 2a. and 2b.) regarding testimony on the emergency planning issues. I believe that we should address now the impact of the Regional Administrator's decision to start the "120-day clock" rather than simply postpone resolution of this issue until the end of the Board's hearing. Specifically, I would advise the Board that it should continue to hear evidence on the "status and degree of conformance with NRC/FEMA guidelines" aspect of Commission Question 3 and the "improvements in the level of emergency planning" and "time schedule" aspects of Commission

Question 4. In my view, each of these elements relates directly to the overall risk posed by the Indian Point plants, and therefore must be considered as part of this proceeding. I would direct the Board to treat the July 30, 1982, findings by the Federal Emergency Management Agency as establishing a rebuttable presumption on the issue of the status and degree of conformance with the NRC/FEMA guidelines, and I would direct the Board to allow the parties to present testimony on whether there are additional deficiencies in emergency preparedness beyond those identified in the July 30, 1982, FEMA report, and if so, how those deficiencies affect the risk posed by the Indian Point plants. On the "minimum hours warning" aspect of Commission Question 3 and the "other specific offsite emergency procedures" aspect of Commission Question 4, I would direct the Board to investigate those matters as they exist at the present time. Finally, I would allow the Board to decide, in its discretion, when to take testimony on the emergency planning issues (Commission Questions 3 and 4). I believe the Board is in the best position to decide the order in which the Commission Questions are to be addressed in this proceeding so as to assure the efficient conduct of the proceeding and the compilation of a record that addresses each of the Commission Questions.

3. UCS Request to Address the Commission

One final aspect of the Commission majority's action on this matter deserves comment. On August 27, 1982, the Union of Concerned Scientists, a party to this proceeding, requested the opportunity to address the Commission before the Commission acted to affirm this order. The majority declined to hear from the parties before affirming this order. I strongly disagree with this action by the majority. Given the potential significant adverse impact of this order on the future participation by a number of parties to this proceeding, I would have afforded the parties an opportunity to address the Commission on the subject of this order. Public confidence in the fairness of this proceeding and in the fairness of our regulatory program in general has already suffered as a result of the Commission majority's July 27, 1982 order and the manner in which that decision was reached. Today's action simply makes matters worse.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gllinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of

Docket Nos. 50-259-OLA
50-260-OLA
50-296-OLA

TENNESSEE VALLEY AUTHORITY

**(Browns Ferry Nuclear Plant,
Units 1, 2 and 3)**

September 15, 1982

In view of the Appeal Board's declaration in ALAB-677, 15 NRC 1387 (1982), that its previous decision in ALAB-664 (15 NRC 1 (1982)) might have been different had it been timely presented with new information concerning licensee's application to store low-level radioactive waste at Browns Ferry, the Commission (1) dismisses its earlier grant of review of ALAB-664; (2) vacates that decision; and (3) remands the case to the Appeal Board for further proceedings.

**NUCLEAR REGULATORY COMMISSION: REVIEW OF APPEAL
BOARD DECISIONS**

The Commission may dismiss its grant of review of an Appeal Board decision even though the parties have briefed the issues. See, *e.g.*, *Jones v. State Board of Education*, 397 U.S. 31 (1970).

ORDER

On April 16, 1982 the Commission took review of two issues regarding the Appeal Board's decision in ALAB-664, 15 NRC 1(1982), to withhold consideration of certain contentions on the Tennessee Valley Authority's (TVA) application to store low-level radioactive waste at the Browns Ferry Nuclear Plant (Browns Ferry) until after the NRC Staff issued its environmental analysis. Shortly after the parties submitted their briefs to the Commission, the Appeal Board learned that TVA had substantially amended its application to store low-level waste at Browns Ferry. After reviewing submittals by counsel for TVA and the NRC Staff, the Appeal Board in ALAB-677, 15 NRC 1387 (1982), found that the amended application constituted a "material alteration of TVA's earlier presentation" because that amendment "significantly modified, if not entirely superseded" the "principal evidentiary support" for TVA's initial application. 15 NRC 1391. For these reasons, the Appeal Board opined that its decision might have been different had the Board had TVA's amended application. The Appeal Board stated:

"Clearly, the new document, which superseded Enclosure 2, was material to the resolution of the issues before us. Indeed, timely presentation of the new information, with appropriate opportunity for comment or rebuttal, might well have changed the outcome of the appeal." *Id.*, at 1393.

In view of this development, the Commission has now determined that review was improvidently granted in this proceeding. See *e.g.*, *Taggart v. Weinaeller's Inc.*, 397 U.S. 223 (1970); *Murel v. Baltimore City Criminal Court*, 407 U.S. 355 (1972). Accordingly, the Commission dismisses the grant of review even though the parties have briefed the issues. See *e.g.*, *Jones v. State Board of Education*, 397 U.S. 31 (1970). Since ALAB-664 was based on a record that no longer represents the situation in this case and will not be reviewed by the Commission, that decision is hereby vacated and shall be given no weight as a precedent. The case is remanded to the Appeal Board for further proceedings. *Boston Edison Company, et al.* (Pilgrim Nuclear Power Station, Unit 2), ALAB-656, 14 NRC 965 (1981); *Rochester Gas and Electric Corporation, et al.* (Sterling Power Project, Nuclear Unit No. 1), ALAB-596, 11 NRC 867 (1980). See also *A. L. Meckling Barge Lines, Inc. v. United States*, 368 U.S. 324 (1961); *United States v. Munsingwear, Inc.*, 340 U.S. 36 (1950).

Commissioners Ahearn and Roberts dissent from this decision.
It is so ORDERED.

For the Commission*

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 15th day of September, 1982.

*Chairman Palladino was not present when this Order was approved. Had Chairman Palladino been present at the meeting he would have voted with the majority. To enable the Commission to proceed with this case without delay, Commissioner Roberts, who was a member of the minority on the question up for decision, did not participate in the formal vote.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Nunzio J. Palladino, Chairman
Victor Gillinsky
John F. Ahearne
Thomas M. Roberts
James K. Asselstine

In the Matter of

Docket Nos. 50-361-OL
50-362-OL

SOUTHERN CALIFORNIA EDISON
COMPANY, et al.
(San Onofre Nuclear Generating
Station, Units 2 and 3)

September 24, 1982

The Commission directs the Appeal Board to certify to the Commission the question whether the phrase "contaminated injured individuals" as used in 10 CFR 50.47(b)(12) requires applicants for nuclear power plants to provide arrangements for medical services only for members of the public who have suffered traumatic injury and are also contaminated with radiation, and if not, to what extent that regulation requires advance and specific arrangements and commitments for medical services for the general public, as opposed to the general knowledge that facilities and resources exist and could be used on an *ad hoc* basis. The Commission states that it will not review the Appeal Board's decision (ALAB-680, 16 NRC 127 (1982)), denying intervenor's motion for a stay of the issuance of full-power licenses and that the license condition imposed by the Licensing Board concerning medical arrangements for the general public shall remain in effect. LBP-82-40, 15 NRC 1293 (1982); LBP-82-39, 15 NRC 1163 (1982).

ORDER

On July 16, 1982, the Commission, acting pursuant to 10 CFR 2.764(f), decided that the Atomic Safety and Licensing Board's decisions resolving contested issues in favor of the issuance of full-power operating licenses for San Onofre Units 2 and 3 could go into effect. CLI-82-14, 16 NRC 24 (1982). The Commission's decision did not authorize issuance of the requested full-power licenses. Under the Commission's decision, full-power licenses would not be issued until the Staff briefed the Commission on uncontested issues and the Commission acted on whether to issue them. The Commission also stated that it would later conduct an immediate effectiveness-type review of the applicants' demonstration of compliance with the Licensing Board's interpretation of 10 CFR 50.47(b)(12) regarding arrangements for medical services for members of the public.

On July 28, 1982, the Staff briefed the Commission on uncontested issues and the Commission authorized Staff to issue a full-power license for San Onofre Unit 2 with specified conditions. On September 7, 1982, Staff issued the full-power license. The license for Unit 3 will need to await further progress in completion of construction.

On July 16, 1982, the Atomic Safety and Licensing Appeal Board denied intervenors' motion to stay the full-power licenses. ALAB-680, 16 NRC 127 (1982). We have decided not to review that decision. However, we note that the Appeal Board's tentative interpretation of 10 CFR 50.47(b)(12) differs from the Licensing Board's interpretation. Because the interpretation of this regulation involves significant issues of policy for the Commission, we hereby direct the Appeal Board to certify to the Commission the following issue:

- (1) Does the phrase "contaminated injured individuals" as used in 10 CFR 50.47(b)(12) require applicants for nuclear power plants to provide arrangements for medical services only for members of the public who have suffered traumatic injury and are also contaminated with radiation?
- (2) If the answer to Question 1 is no, to what extent does 10 CFR 50.47(b)(12) require advance, specific arrangements and commitments for medical services for the general public as opposed to the general knowledge that facilities and resources exist and could be used on an *ad hoc* basis?

Any party who wishes to participate in the resolution of this certified issue shall have its brief on the issue in the Commission's hands no later than 20 days from the date of this Order. Any party submitting a brief may submit a reply brief provided that it is in the Commission's hands no later than 35 days from the date of this Order.

During the pendency of the Commission's consideration of this issue, the license condition on offsite medical arrangements imposed by the Licensing Board, which incorporates the Board's construction that 10 CFR 50.47(b)(12) requires medical arrangements for members of the general public who might suffer radiation injury in a nuclear accident, shall remain in effect.

Commissioner Roberts dissents from this decision because he would not direct certification of the offsite medical arrangements issue.

It is so ORDERED.

For the Commission*

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.,
this 24th day of September, 1982.

*Commissioner Roberts was not present when this Order was affirmed, but had previously indicated his disapproval of this Order. Had Commissioner Roberts been present, he would have affirmed his prior vote.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Christine N. Kohl, Chairman
Dr. W. Reed Johnson
Howard A. Wilber

In the Matter of

Docket No. STN 50-437-ML

OFFSHORE POWER SYSTEMS
(Manufacturing License for
Floating Nuclear Power Plants)

September 1, 1982

The Appeal Board grants applicant's motion for clarification of its previous memorandum and order (ALAB-686, 16 NRC 454 (1982)) in which the Appeal Board (1) concluded that it is not obliged by the "immediate effectiveness" regulation (10 CFR 2.764) to conduct such a review in manufacturing license proceedings, and (2) announced that, in the absence of exceptions to the Licensing Board's initial decision (LBP-82-49, 15 NRC 1658 (1982)), it would undertake *sua sponte* review of it. In granting the motion for clarification, the Appeal Board explains, *inter alia*, the nature of its *sua sponte* review authority and its relationship to the effectiveness of licensing board initial decisions.

APPEAL BOARD: SCOPE OF REVIEW (*SUA SPONTE*)

An immediate effectiveness review of a licensing board decision is not a substitute for an appeal board's usual *sua sponte* review of the decision and its underlying record before the decision is accorded finality.

APPEAL BOARD: SCOPE OF REVIEW (SUA SPONTE)

Sua sponte review by an appeal board is a long-standing Commission-approved practice which is undertaken in all cases, regardless of their nature or whether exceptions have been filed. See 10 CFR 2.760(a), 2.785(a). This type of review extends to “ ‘any final disposition of a licensing proceeding that either was or had to be founded upon substantive determinations of significant safety or environmental issues.’ ” *Sacramento Municipal Utility District* (Rancho Seco Nuclear Generating Station), ALAB-655, 14 NRC 799, 803 (1981), quoting *Washington Public Power Supply System* (WPPSS Nuclear Project No. 2), ALAB-571, 10 NRC 687, 692 (1979). See also *Northern States Power Company* (Monticello Nuclear Generating Plant, Unit 1), ALAB-611, 12 NRC 301, 304 (1980), and cases cited.

APPEAL BOARD: SCOPE OF REVIEW (SUA SPONTE)

Only the administrative finality of a licensing board’s decision is deferred pending *sua sponte* review by an appeal board; the effectiveness of the decision is not stayed.

APPEAL BOARD: SCOPE OF REVIEW (SUA SPONTE)

If *sua sponte* review uncovers problems in a licensing board’s decision or the record that may require corrective action adverse to a party’s interest, the appeal board’s consistent practice is to give the party ample opportunity to address the matter, as appropriate. See, e.g., *Rancho Seco, supra*, 14 NRC at 803-04, 817; *Monticello, supra*, 12 NRC at 309-13; *Virginia Electric and Power Co.* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-529, 9 NRC 153 (1979); *Virginia Electric and Power Co.* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-491, 8 NRC 245, 249-50 (1978).

APPEARANCES

Messrs. Barton Z. Cowan and John R. Kenrick, Pittsburgh, Pennsylvania, and **Thomas M. Daugherty**, Jacksonville, Florida, for applicant.

MEMORANDUM AND ORDER

Applicant Offshore Power Systems has moved for clarification and, in the alternative, petitioned for reconsideration of our memorandum and order in ALAB-686, 16 NRC 454 (1982). The purpose of that decision was twofold. First, because no exceptions had been filed, we announced our intent to review *sua sponte* the Licensing Board's initial decision in LBP-82-49, 15 NRC 1658 (1982). We also noted in this regard that, "[a]s is ordinarily the case in such circumstances, the initial decision shall not constitute final agency action until completion of our review and further order." 16 NRC at 455-56.¹ Second, we "conclude[d] that 10 CFR 2.764 does not oblige us to conduct an immediate effectiveness review in manufacturing license proceedings." *Id.* at 456.

Applicant's concern is that the effect of this latter ruling, "coupled with the Appeal Board's purported exercise of *sua sponte* review authority, was to indefinitely stay, without any basis, the effectiveness of the Initial Decision rendered by the Atomic Safety and Licensing Board in this proceeding on June 30, 1982." OPS Motion (August 23, 1982) at 1. Applicant also believes that 10 CFR 2.764 applies to manufacturing license proceedings such as this (*id.* at 2, 3) and, presumably, that we should conduct an immediate effectiveness review. Applicant argues further that if 10 CFR 2.764 does not apply to this proceeding, 10 CFR 2.760(a) does. That provision states that initial decisions in licensing proceedings become the final action of the Commission within 45 days unless exceptions are filed or the Commission (or the Appeal Board as its delegate under 10 CFR 2.785(a)) certifies the record to it for final decision. Applicant argues that our "*sua sponte* review authority . . . may not be invoked in such a manner as to supercede [*sic*] the Commission regulations concerning appellate review as set forth in §2.760." Motion at 4. According to applicant, ALAB-686 "directly and adversely affects" its interests. *Ibid.*

We disagree with applicant both as to the need for clarification or reconsideration and as to the asserted adverse effects of our rulings on its interest.² We think ALAB-686 is quite clear, understandable, noncontroversial, and unprejudicial. For that reason, we are tempted to deny applicant's motion outright. Nevertheless, we grant the motion for clarification because it evidences a basic misunderstanding of our *sua sponte* review authority and its relationship to the effectiveness of licensing board initial decisions.

¹ In LBP-82-49, the Licensing Board authorized the issuance of the first license for the manufacture of standardized nuclear plants.

² Interestingly, nowhere in its motion does applicant quote directly from ALAB-686 in support of its strained reading and interpretation.

Applicant's initial error was in attributing so much weight to the "coupling]" of our two rulings in ALAB-686. Motion at 1. The two points were independent, as evidenced by the structure of our memorandum. Further, nothing in ALAB-686 suggests a relationship between our intent to undertake a *sua sponte* review and our conclusion that we have no immediate effectiveness review responsibility. Indeed, there is no relationship.³ Contrary to applicant's apparent but incorrect belief, an immediate effectiveness review is not a substitute for our usual *sua sponte* review. As shown by the discussion below, the two have nothing to do with one another.

A second shortcoming of applicant's argument is that it stems from an obvious lack of familiarity with or misunderstanding of the nature of our *sua sponte* review. This long-standing Commission-approved appeal board practice is undertaken in all cases, regardless of their nature or whether exceptions have been filed.⁴ In this regard, ALAB-686 simply referred to our most recently reported precedent on this point, *Sacramento Municipal Utility District* (Rancho Seco Nuclear Generating Station), ALAB-655, 14 NRC 799, 803 (1981).⁵

In *Rancho Seco*, at the page cited, we stated (emphasis in original): "It is our practice, however, to review *sua sponte* 'any final disposition of a licensing proceeding that either was or had to be founded upon substantive determinations of significant safety or environmental issues.' *Washington Public Power [Supply] System* (WPPSS Nuclear Project No. 2), ALAB-571, 10 NRC 687, 692 (1979)." *Rancho Seco* also referred to another case involving our *sua sponte* review practice, *Northern States Power Co.* (Monticello Nuclear Generating Plant, Unit 1), ALAB-611, 12 NRC 301, 304 (1980), and cases cited. Both *WPPSS* and *Monticello* involved the issuance of operating licenses.⁶ That fact plus the language in *Rancho Seco* and *WPPSS* emphasizing that our *sua sponte* review authority extends to "any final disposition of a licensing proceeding . . ." leave no room for serious argument that our *sua sponte* review cannot and should not be invoked in this manufacturing license proceeding.⁷

³ We might just as easily have entered two orders at different times, conveying our rulings separately.

⁴ Rather than superseding Commission regulations, as applicant contends, this practice is based on our authority under 10 CFR 2.760(a) and 2.785(a) to review the record and decisions in proceedings before according them "finality."

⁵ We did not think it was necessary to elaborate on our *sua sponte* review practice for the benefit of counsel so experienced in NRC litigation.

⁶ *Rancho Seco* was a special proceeding involving an already licensed facility.

⁷ See, e.g., *Jersey Central Power and Light Co.* (Oyster Creek Nuclear Generating Station), ALAB-612, 12 NRC 314 (1980) (conversion of provisional to full-term operating license); *Virginia Electric and Power Co.* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-491, 8 NRC 245 (1978) (operating license); *Boston Edison Co.* (Pilgrim Nuclear Power Station, Unit 1), ALAB-231, 8 AEC 633 (1974) (amendment of technical specifications of operating license); *Washington Public Power Supply System* (Hanford No. 2 Nuclear Power Plant), ALAB-113, 6 AEC 251 (1973) (construction permit). See also *Niagara Mohawk Power Corp.* (Nine Mile Point Nuclear Station, Unit 2), ALAB-264, 1 NRC 347, 373 n.91 (1975); *Louisiana Power and Light Co.* (Waterford Steam Generating Station, Unit No. 3), ALAB-258, 1 NRC 45, 48 n.6 (1975).

The only “adverse effect” from our *sua sponte* review to which applicant refers in its motion is the “indefinite[] stay” of the effectiveness of the Licensing Board’s initial decision. Motion at 1. But we assume applicant’s real, though unstated, concern is that the Director of Nuclear Reactor Regulation may somehow be precluded by our *sua sponte* review from issuing the manufacturing license authorized by the Licensing Board in LBP-82-49.

Review of the above-referenced cases should relieve applicant’s fears. In no instance has our conduct of a *sua sponte* review served (or been construed) to revoke, suspend, or defer issuance of a license. Only the finality of the Licensing Board’s underlying decision is deferred pending our review; the effectiveness of the decision is not stayed. Applicant has thus simply confused the administrative concepts of “effectiveness” and “finality.”⁸

Applicant has also misread our unrelated conclusion that “10 CFR 2.764 does not oblige us to conduct an immediate effectiveness review in manufacturing license proceedings.” ALAB-686, 16 NRC at 456 (emphasis added). We know of no clearer way of stating this.

Contrary to applicant’s “interpretation,” we expressed no view on what obligation the Commission may or may not have to conduct an immediate effectiveness review in this type of proceeding. Motion at 1. Indeed, it would have been inappropriate for us to determine the Commission’s responsibilities in this regard. Nor did we even imply that our decision not to conduct an immediate effectiveness review had any bearing whatsoever on the effectiveness of the Licensing Board’s decision insofar as issuance of the license is concerned.⁹ Again, all that we held (and reaffirm here) — based on the wording of 10 CFR 2.764 and an exhaustive review of its history and that of related provisions — was that the Appeal Board is not required to undertake an immediate effectiveness review in manufacturing license proceedings.

⁸ When an appeal board stays the effectiveness of an initial decision and seeks the revocation, suspension, or deferral of issuance of a license, it says so in the clearest of terms. See, e.g., *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), ALAB-141, 6 AEC 576, 583-585 (1973); *Wisconsin Electric Power Co.* (Point Beach Nuclear Plant, Unit 2), ALAB-85, 5 AEC 375 (1972). Further, if our *sua sponte* review uncovers problems in a licensing board’s decision or the record that may require corrective action adverse to a party’s interest, our consistent practice is to give the party ample opportunity to address the matter, as appropriate. See, e.g., *Rancho Seco, supra*, 14 NRC at 803-804, 817; *Monticello, supra*, 12 NRC at 309-313; *Virginia Electric and Power Co.* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-529, 9 NRC 153 (1979); *North Anna, supra*, 8 NRC at 249-250.

⁹ Assuming that there were some room for reasonable doubt as to the meaning of what we regard as a straightforward and limited holding, footnote 7 should have dispelled it. There we stated: “[E]ven if we were required to conduct an immediate effectiveness review, it is unlikely that the ‘irreparable injury’ criterion of 10 CFR 2.788(e)(2) — which 10 CFR 2.764(e)(2)(ii) directs us to apply — could ever be satisfied in the case of a manufacturing license.” 16 NRC at 458 n.7. Given that statement and the total absence of any suggestion that the license could not be issued (see p. 891, *supra*), we are unable to find any reasonable basis for applicant’s interpretation of ALAB-686.

We trust that this resolves the problems applicant has perceived in ALAB-686, and we caution against such further exercises in “overinterpretation” of our decisions.

The applicant’s motion for clarification is *granted*.¹⁰
It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

¹⁰ In view of this disposition, we see no need for briefing this matter, as applicant requested. Motion at 5.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Stephen F. Ellperin, Chairman
Christine N. Kohl
Dr. Reginald L. Gotchy

In the Matter of

Docket No. 50-382-OL

LOUISIANA POWER AND LIGHT COMPANY
(Waterford Steam Electric Station,
Unit 3)

September 7, 1982

The Appeal Board dismisses without prejudice a petitioner's appeal from a non-final order of the Licensing Board.

RULES OF PRACTICE: APPELLATE PROCEDURE

The test of "finality" for appeal purposes before the Nuclear Regulatory Commission (as in the courts) is essentially a practical one. As a general matter, a licensing board's action is final for appellate purposes where it either disposes of at least a major segment of the case or terminates a party's right to participate; rulings which do neither are interlocutory. *Toledo Edison Co., et al.* (Davis-Besse Nuclear Power Station), ALAB-300, 2 NRC 752, 758 (1975). Where a party has been given an opportunity to file a new petition for leave to intervene, the Licensing Board order that denied the prior petition is non-final and not immediately appealable.

APPEARANCES

Mr. William J. Guste, Jr., and Ms. Linda B. Watkins, Baton Rouge,
Louisiana, for appellant, the State of Louisiana.

Mr. Bruce W. Churchill, Mr. James B. Hamlin, and Ms. Delissa A. Ridgway,
Washington, D.C., for applicant Louisiana Power and Light Company.

Mr. Sherwin E. Turk for the Nuclear Regulatory Commission Staff.

MEMORANDUM AND ORDER

The State of Louisiana has appealed from an unpublished April 20, 1982 order of the Licensing Board that denied the State's petition to participate on an issue initially raised by the Board *sua sponte* but subsequently withdrawn.¹ The Licensing Board's April 20 order advised the State that it "may, however, pursuant to 10 CFR §2.714(a)(1) or §2.715(c), file a petition for leave to intervene or to participate and set forth therein the specific aspect or aspects of the subject matter as to which the State wishes to intervene or to participate." On July 21, 1982, the State of Louisiana filed a new such petition, which is currently pending before the Licensing Board.

The State's appeal is opposed by the NRC Staff and the applicant on a variety of grounds. For the reasons set forth below, we hold that the Board's April 20 order is nonfinal and hence not appealable. Consequently, we dismiss the State's appeal without prejudice to its raising the question of its right to participate through a new appeal, should the Board deny the State's pending petition.

Analysis

We have often commented that

[t]he test of "finality" for appeal purposes before this agency (as in the courts) is essentially a practical one. As a general matter, *a licensing board's action is final for appellate purposes where it either disposes of at least a major segment of the case or terminates a party's right to participate; rulings which do neither are interlocutory.*

Toledo Edison Co., et al. (Davis-Besse Nuclear Power Station), ALAB-300, 2 NRC 752, 758 (1975) (emphasis added; footnotes omitted). See also *Nuclear*

¹ The issue concerned the reliability of the Waterford 3 emergency feedwater system and the need for a "feed-and-bleed" backup capability. See Memorandum and Order of March 18, 1982 (unpublished). The Board orally granted the applicant's motion for reconsideration of its decision to raise this issue *sua sponte* and withdrew the issue during an April 16, 1982 conference call. The April 20 order reiterated the Board's decision to withdraw the issue.

Engineering Co., Inc. (Sheffield, Illinois, Low-Level Radioactive Waste Disposal Site), ALAB-606, 12 NRC 156, 160 (1980).² The order from which the State has appealed in this case did neither. As we have recounted, because the Board was no longer pursuing the issue, the April 20 order rejected the State's attempt to "piggyback" on the Board's investigation of the plant's feedwater reliability. See n. 1, *supra*.³ While rejecting the State's participation on that ground, the Board nonetheless afforded the State leave to amend its petition. As noted, the State took advantage of this offer and filed a new petition pursuant to 10 CFR 2.714(a)(1) raising the feedwater reliability issue as well as waste disposal questions. The applicant and Staff have responded to this latest petition and the petition is pending before the Licensing Board at this time.⁴

Louisiana is essentially in the position of one whose complaint has been dismissed with leave to amend and who has pursued that option. The federal courts have not treated that situation or comparable ones as giving rise to an appealable order, nor will we. See *Austracan, (U.S.A.) Inc. v. MIV Lemoncore*, 500 F.2d 237, 239-40 (5th Cir. 1974); *United States Sugar Corp. v. Atlantic Coast Line R.R.*, 196 F.2d 1015, 1016 (5th Cir. 1952). See also *Washington v. Confederated Tribes of the Colville Indian Reservation*, 447 U.S. 134, 149-50 (1980) (filing of motion for partial new trial renders nonfinal trial court's disposition of all issues). Should the Licensing Board deny the State's new petition to intervene, thereby terminating its right to participate in this proceeding, an appeal will properly lie from that new order. At this point, however, the State's petition rests with the Licensing Board for decision.⁵

² This requirement of finality applies with equal force to both appeals from rulings on petitions to intervene pursuant to 10 CFR 2.714a, and appeals from initial decisions pursuant to 10 CFR 2.762.

³ The Board declined to pursue *sua sponte* review because it concluded that the Advisory Committee on Reactor Safeguards, NRC Staff, and Combustion Engineering were all giving their attention to questions concerning the reliability of the Waterford 3 emergency feedwater system and the need for feed-and-bleed backup. Memorandum and Order of April 27, 1982 (unpublished) at 8.

⁴ See Applicant's Response to State of Louisiana's Petition to Intervene (August 9, 1982); NRC Staff's Response to Petition Filed by the State of Louisiana (August 10, 1982).

⁵ We summarily reject the argument of both the Staff and the applicant that the State's appeal should be dismissed because it was not filed within the 10-day period established for appeals under either 10 CFR 2.714a or 2.762(a). There is no dispute that the State was not served with the Board's April 20 order until July 29, 1982, although the State, as it reminded the Board, apparently requested the order on at least one occasion. See State of Louisiana Petition (July 21, 1982) at 3. We note that the Board acknowledged its responsibility for this oversight. Letter of Licensing Board Chairman Sheldon J. Wolfe to William J. Guste, Jr. (July 29, 1982).

The Licensing Board's informal, oral notification of its ruling during the April 16 conference call in which State counsel participated cannot fairly substitute for service of the order or initial decision, which triggers the time for seeking appeal. 10 CFR 2.714a, 2.762(a). See also 10 CFR 2.712(a), requiring service by the Commission of all orders upon all parties, and 10 CFR 2.730(e), permitting oral rulings only during the course of a prehearing conference or hearing. In those latter instances a transcript of the oral ruling is made and most of the parties are physically present. Indeed, 10 CFR 2.730(e) specifically requires that parties not present be notified promptly of the order.

The appeal of the State of Louisiana from the Licensing Board's April 20, 1982 order is *dismissed*.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Christine N. Kohl, Chairman
Dr. W. Reed Johnson
Gary J. Edles

In the Matter of

Docket Nos. 50-329-CP
50-330-CP
(Remand Proceeding)

CONSUMERS POWER COMPANY
(Midland Plant, Units 1 and 2)

September 9, 1982

The Appeal Board dismisses an intervenor's appeal of the Licensing Board's decision in LBP-81-63, 14 NRC 1768 (1981), not to impose sanctions against the licensee for failure to disclose assertedly significant information in an earlier phase of this construction permit proceeding. The Appeal Board, however, pursuant to *sua sponte* review of the record affirms the Licensing Board's decision not to impose sanctions, but corrects certain of the Board's underlying legal conclusions.

RULES OF PRACTICE: FINDINGS OF FACT

Requiring the submission to a licensing board of proposed findings of fact or a comparable document is not a mere formality: it gives that board the benefit of a party's arguments and permits it to resolve them in the first instance — possibly in the party's favor, obviating later appeal.

RULES OF PRACTICE: APPELLATE PROCEDURE

Unless there is a serious substantive issue as to which a genuine problem has been demonstrated, an appeal board ordinarily will not entertain an issue raised for

the first time on appeal. *Tennessee Valley Authority* (Hartsville Nuclear Plant, Units 1A, 2A, 1B, and 2B), ALAB-463, 7 NRC 341, 348 (1978). See also *Public Service Electric and Gas Co., et al.* (Salem Nuclear Generating Station, Unit 1), ALAB-650, 14 NRC 43, 49 (1981).

RULES OF PRACTICE: APPELLATE PROCEDURE

A party that fails to submit proposed findings as requested by a licensing board, relying instead on the submissions of others, assumes the risk that such reliance might be misplaced; it must be prepared to live with the consequence that its further appeal rights will be waived. *Cf. Duke Power Co.* (Cherokee Nuclear Station, Units 1, 2 and 3), ALAB-440, 6 NRC 642, 644-45 (1977).

RULES OF PRACTICE: APPELLATE PROCEDURE

Although parties not adversely affected by the ultimate outcome of a licensing board decision may not appeal that decision, they may defend a result in their favor on any ground presented in the record, including one rejected below. *Public Service Co. of Oklahoma, et al.* (Black Fox Station, Units 1 and 2), ALAB-573, 10 NRC 775, 789 (1979).

APPEAL BOARD: SCOPE OF REVIEW (*SUA SPONTE*)

Regardless of whether there is an appeal, it is appeal board practice to review *sua sponte* any final disposition of a licensing proceeding that either was or had to be founded upon substantive determinations of significant safety or environmental issues. *Sacramento Municipal Utility District* (Rancho Seco Nuclear Generating Station), ALAB-655, 14 NRC 799, 803 (1981); *Washington Public Power Supply System* (WPPSS Nuclear Project No. 2), ALAB-571, 10 NRC 687, 692 (1979).

APPEAL BOARD: SCOPE OF REVIEW

Appeal boards do not ordinarily scrutinize licensing board rulings on economic issues, intervention requests, or procedural matters in the absence of a properly perfected appeal. *Louisiana Power and Light Co.* (Waterford Steam Generating Station, Unit No. 3), ALAB-258, 1 NRC 45, 48 n.6 (1975); *Washington Public Power Supply System* (Nuclear Projects No. 1 and No. 4), ALAB-265, 1 NRC 374, 375 n.1 (1975); *Boston Edison Co.* (Pilgrim Nuclear Power Station, Unit 1), ALAB-231, 8 AEC 633-634 (1974).

APPEAL BOARD: SCOPE OF REVIEW (*SUA SPONTE*)

An appeal board may undertake *sua sponte* review of a licensing board decision concerned with the integrity of the hearing process.

APPEAL BOARD: SCOPE OF REVIEW (*SUA SPONTE*)

It is not the appeal board's function in a *sua sponte* review of a licensing board decision to undertake a detailed scrutiny of the entire record. Rather, the appeal board usually addresses only those portions of the licensing board's opinion that it believes deserve clarification or correction. Further, absence of appeal board comment on a particular licensing board statement should not be construed as either agreement or disagreement with it.

ATOMIC ENERGY ACT: DUTIES OF APPLICANTS/LICENSEES

An applicant or a licensee has an obligation in NRC proceedings to provide accurate and timely information. *Petition for Emergency and Remedial Action*, CLI-78-6, 7 NRC 400, 418 (1978). See also *Tennessee Valley Authority* (Browns Ferry Nuclear Plant, Units 1, 2 and 3), ALAB-677, 15 NRC 1387 (1982). The source of this obligation is the Atomic Energy Act itself. See Section 186a, 42 U.S.C. 2236a.

ATOMIC ENERGY ACT: MATERIAL FALSE STATEMENT

Liability of an applicant or licensee for a material false statement in violation of Section 186a of the Atomic Energy Act does not depend on whether the applicant or licensee knew of the falsity. *Virginia Electric and Power Co.* (North Anna Power Station, Units 1 and 2), CLI-76-22, 4 NRC 480 (1976), *aff'd sub nom. Virginia Electric and Power Co. v. Nuclear Regulatory Commission*, 571 F.2d 1289 (4th Cir. 1978).

ATOMIC ENERGY ACT: MATERIAL FALSE STATEMENT

Under Section 186a of the Atomic Energy Act, the test for materiality is whether the information is capable of influencing the decisionmaker — not whether the decisionmaker would, in fact, have relied on it. Determinations of materiality require careful, common-sense judgments of the context in which information appears and the stage of the licensing process involved. *North Anna, supra*, 4 NRC at 487, 491.

ATOMIC ENERGY ACT: MATERIAL FALSE STATEMENT

A “material false statement” under Section 186a of the Atomic Energy Act encompasses omissions as well as affirmative statements. *North Anna, supra*, 4 NRC at 489.

ATOMIC ENERGY ACT: DUTIES OF APPLICANTS/LICENSEES

In general, if a party has doubts about whether to disclose information, it should do so, as the ultimate decision with regard to materiality is for the decisionmaker, not the parties.

ATOMIC ENERGY ACT: MATERIAL FALSE STATEMENT

The mere existence of a question or discussion about the possible materiality of information does not *necessarily* make the information material.

ATOMIC ENERGY ACT: MATERIAL FALSE STATEMENT

Intent to deceive is irrelevant in determining whether there has been a material false statement under Section 186a of the Atomic Energy Act; a deliberate effort to mislead the NRC, however, is relevant to the matter of sanctions, once a material false statement has been found.

ATOMIC ENERGY ACT: LICENSEE’S CHARACTER

Information concerning a licensee’s or an applicant’s intent to deceive may call into question its “character” — a matter the Commission is authorized to consider under Section 182 of the Atomic Energy Act, 42 U.S.C. 2232a — or its ability and willingness to comply with agency regulations, as Section 103b, 42 U.S.C. 2133b, requires.

RULES OF PRACTICE: STANDARDS OF PRACTICE

The Commission’s Rules of Practice require parties and their representatives to conduct themselves with honor, dignity, and decorum as they should before a court of law. 10 CFR 2.713(a).

RULES OF PRACTICE: STANDARDS OF PRACTICE (CANONS OF ETHICS)

The Commission generally follows the American Bar Association's Code of Professional Responsibility in judging lawyer conduct in NRC proceedings. See, e.g., *Northern Indiana Public Service Co.* (Bailly Generating Station, Nuclear-1), ALAB-204, 7 AEC 835, 838 (1974).

RULES OF PRACTICE: STANDARDS OF PRACTICE (CANONS OF ETHICS)

Canon 7 of the ABA Code of Professional Responsibility — which exhorts lawyers to represent their clients “zealously within the bounds of the law” — and its associated Ethical Considerations and Disciplinary Rules provide the standards by which attorneys should abide in the preparation of testimony for NRC proceedings.

RULES OF PRACTICE: STANDARDS OF PRACTICE (PREPARATION OF TESTIMONY)

In judging the propriety of a lawyer's participation in the preparation of testimony of a witness, the key factor is not who originated the words that comprise the testimony, but whether the witness can truthfully attest that the statement is complete and accurate to the best of his or her knowledge.

RULES OF PRACTICE: STANDARDS OF PRACTICE

Gamesmanship and sporting conduct between or among lawyers and parties is not condoned in Nuclear Regulatory Commission proceedings.

APPEARANCES

Mr. Myron M. Cherry, Chicago, Illinois (with whom **Mr. Peter Flynn** was on the brief), for intervenor Saginaw Valley Nuclear Study Group.

Mr. Gerald Charnoff, Washington, D.C. (with whom **Mr. Dean D. Aulick** and **M. Deborah B. Bauser** were on the brief), for licensee Consumers Power Company.

Mr. William C. Potter, Jr., Detroit, Michigan (with whom **Mr. T. J. Cresswell**, Midland, Michigan, was on the brief), for intervenor The Dow Chemical Company.

Messrs. Barton Z. Cowan and John R. Kenrick and Ms. Ann M. Strickland, Pittsburgh, Pennsylvania, on the brief for *amicus curiae* The Lawyers Committee Steering Group of the Atomic Industrial Forum, Inc.

Mr. William J. Olmstead (Messrs. **Michael N. Wilcove and William D. Paton** were on the brief) for the Nuclear Regulatory Commission Staff.

DECISION

This construction permit proceeding, in its various stages, is now in its second decade. Pending before us here is the appeal of intervenor Saginaw Valley Nuclear Study Group (Saginaw Valley) from the Licensing Board's December 22, 1981, partial initial decision in a special proceeding on remand. See LBP-81-63, 14 NRC 1768. The principal inquiry in this phase of the case is the alleged attempt by licensee Consumers Power Company to prevent full disclosure in an earlier phase of the proceeding of certain important information. The Licensing Board concluded that "the parties and their lawyers took an improperly narrow view of their duty affirmatively to disclose significant information," but found that "sanctions are neither necessary nor appropriate." *Id.* at 1800, 1801. Saginaw Valley agrees with the facts as found by the Board but appeals its determination not to impose sanctions against Consumers Power. Saginaw Valley Brief (February 22, 1982) at 1-2, 4.

For the reasons discussed below, we dismiss Saginaw Valley's appeal. We nonetheless review the entire decision *sua sponte* and affirm the Board's decision not to impose sanctions, as explained in this opinion.

I.

Before we address the merits of this most recent episode, a brief outline of the history of this proceeding is in order.

Consumers Power received its construction permits for the two Midland facilities in 1972. LBP-72-34, 5 AEC 214 (1972), *aff'd*, ALAB-123, 6 AEC 331 (1973). Certain parties sought judicial review, and in 1976 the U.S. Court of Appeals for the District of Columbia Circuit remanded this case (and others) for further action on issues relating primarily to the environmental impacts of the

nuclear fuel cycle. *Aeschliman v. Nuclear Regulatory Commission*, 547 F.2d 622 (D.C. Cir. 1976).¹ Accordingly, the Commission reconvened a licensing board to determine whether the Midland construction permits should be modified or suspended and to consider the issues identified by the court. CLI-76-11, 4 NRC 65; CLI-76-14, 4 NRC 163 (1976).

This "Suspension Board" held extensive hearings. Among the issues considered, pursuant to the District of Columbia Circuit's decision, was the need for the facility — particularly by Dow Chemical Company. See 547 F.2d at 632. Dow, an intervenor in the construction permit proceeding, had contracted with Consumers Power for the purchase of process steam from the Midland Units for use at Dow's nearby industrial plant. In declining to suspend the permits, the Board found that "Dow continues to need process steam," though the company "has continuously reviewed its situation regarding purchase of steam from the Midland plant" and "continues to . . . [keep] its options open." LBP-77-57, 6 NRC 482, 487, 488 (1977). The Board made the following observation, however (*id.* at 485-486):

There is evidence in this record that Licensee has considered conducting its share of this proceeding in such a way as to not disclose important facts to the Board. Notes taken by a Dow attorney of meetings with Consumers' attorneys indicate the desire of the latter to "finesse" the dispute with Dow if no Intervenors appeared (Intervenors Ex. 25, page 2, paragraph B). The same notes reflect the exploration by a Consumers' attorney of the possibility of using Dow witnesses unfamiliar with the facts relating to the Dow-Consumers dispute to testify at the hearing; they further disclose a proposed strategy by Consumers to "drag feet" in the hearing process because as long as construction continues, Consumers "has a lever" (page 3, paragraph 4). Assuming that the proposals set out here were made and acted upon, none were successful. Aggressive Intervenors did appear and the Dow-Consumers matter was aired; the Dow witnesses furnished were highly knowledgeable men (Mr. Temple headed the Michigan Division of Dow); and Licensee has not slowed the suspension hearing. Of course there remains the suspicion, raised by the disclosure of these instances, that there may have been similar ploys which were successful.

We affirmed the Suspension Board's decision in ALAB-458, 7 NRC 155 (1978). With respect to the need for power and the Dow-Consumers Power contract, we described the evidence as showing that

some officials in the local Dow management view Midland as a losing proposition and would abandon it, but the senior corporate officers have decided, subject to reconsideration if circumstances change, that Dow will

¹ Notwithstanding the parties' pursuit of court review, construction of these facilities, which had begun earlier under an interim authorization, continued pursuant to the newly issued permits.

honor the contract to buy steam from Midland, notwithstanding that intervening events have rendered its terms far less attractive to Dow than they originally were.

Id. at 167 (footnote omitted). We viewed this as “convincing evidence that Dow’s present intention is to adhere to the contract’s terms.” *Id.* at 168 (footnote omitted). Nevertheless, we expressed our concern about the Suspension Board’s suspicions that Consumers Power may not have fully disclosed all the important facts relating to the Dow contract. We therefore noted our expectation that this matter would “be fully aired and resolved” at future hearings (on unrelated issues) before the Board — “whether or not the parties are themselves otherwise interested in pursuing” it. *Id.* at 177 n.87.

Shortly after our decision in ALAB-458, the Supreme Court reversed *Aeschliman* and remanded it to the District of Columbia Circuit. *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc.*, 435 U.S. 519 (1978). Consequently, the Commission noted that “the only issue [among those originally identified for further action as a result of *Aeschliman*] which remains . . . for consideration by the Licensing Board is the airing and resolution of the charges relating to Consumers’ conduct.” Memorandum and Order of November 6, 1978 (unpublished) at 2.²

The Board thus held hearings during July 1979 at which the following issues were explored:

Issue No. 1

Whether there was an attempt by parties or attorneys to prevent full disclosure of, or to withhold relevant factual information from the Licensing Board in the suspension hearings (ALAB-458, 7 NRC 155, 172 fn. 64[.] 177, fn. 87).

Issue No. 2

Whether there was a failure to make affirmative full disclosure on the record of the material facts relating to Dow’s intentions concerning performance of its contract with Consumers.

Issue No. 3

Whether there was an attempt to present misleading testimony to the Licensing Board concerning Dow’s intentions.

Issue No. 4

Whether any of the parties or attorneys attempted to mislead the Licensing Board concerning the preparation or presentation of the Temple testimony.

² In the same order (at 2), the Commission also directed the Licensing Board to “address the issue of the environmental effects of radon as required by subsequent Commission actions.”

Issue No. 5

What sanctions, if any, should be imposed as a result of affirmative finds on any of the above issues.

44 *Fed. Reg.* 35061 (June 18, 1979). Fourteen persons testified, all as Board witnesses. Although Consumers Power, Dow, and the NRC Staff participated in the hearing, neither Saginaw Valley nor any of the other intervenors with which it was aligned participated or filed a post-hearing brief or proposed findings.³ The Licensing Board fully explored both the incident in question arising from the Suspension Board hearing and the duty of affirmative disclosure imposed on applicants and licensees in NRC proceedings. As noted above, the Board concluded that "in developing testimony on the issue of Dow's intentions concerning the purchase of steam, the parties and their lawyers took an improperly narrow view of their duty affirmatively to disclose significant information to the Board." 14 NRC at 1800. In particular, the Board found that certain prefiled direct testimony on behalf of Consumers Power should have included "a fair and candid description of the true relations between Dow and Consumers." *Ibid.* The Board nonetheless chose not to impose sanctions against any party or its counsel because (1) it found no deliberate intent to engage in fraud or unethical conduct; (2) it believed the standards by which it measured the involved conduct were new; and (3) all the significant information was ultimately included (through cross-examination) in the record of the suspension proceeding. *Id.* at 1801. It is the Board's determination not to impose sanctions that Saginaw Valley alone appeals.⁴

II.

As a threshold matter, Consumers Power, Dow, and the Staff each contend that we should dismiss Saginaw Valley's appeal. They argue that intervenor has waived its right to appeal by failing to participate below.

Saginaw Valley has nominally been an intervenor throughout the various stages of the Midland construction permit proceeding. Although instrumental in provoking the particular phase at hand, Saginaw Valley elected not to participate in the hearing itself, primarily for financial reasons. As noted above, however, its

³ Counsel for all of these intervenors, however, was promptly served with copies of all transcripts, exhibits, pleadings, and other papers. 14 NRC at 1777. As discussed below, intervenors' counsel submitted a letter to the Board, three months after post-trial briefs and proposed findings were due, containing his views on the issues. The Board later solicited from intervenors a formal filing with analysis and citations to the record, but none was ever filed.

⁴ The Lawyers Committee Steering Group of the Atomic Industrial Forum, Inc., requested and received permission to participate as *amicus curiae* with respect to two legal issues in this case: the standard for the preparation of direct testimony (the duty of affirmative disclosure), and the standard of conduct for counsel who assist expert witnesses in the preparation of direct testimony. See note 9, *infra*.

counsel was served with all transcripts, exhibits, pleadings, orders, and the like. See note 3, *supra*. Further, Staff counsel advised Saginaw Valley's counsel the day after the hearing terminated that that party (like the other parties) was permitted to file a post-hearing brief or proposed findings by October 1979. Letter of William D. Paton to Myron M. Cherry (August 1, 1979). Nevertheless, Saginaw Valley submitted nothing until January 11, 1980, when it apprised the Licensing Board in a five-page letter of its views on this special proceeding and Consumers Power in general. This letter was self-described (at 4) as "in the nature of [a] post-trial memorandum" and purported (at 2) to preserve a right to appeal. It stated without elaboration (at 4) intervenor's belief that "Consumers has attempted to distort the proceedings by persistently focusing on a fictitious issue." The letter contained no references to the record or any other material on which the Licensing Board could rely in reaching its decision. Nor did it address the matter of sanctions.

In an unpublished order issued November 14, 1980, the Licensing Board noted (at 3) its desire "to be fully advised as to the facts and law by all parties," as well as the unfairness in allowing Saginaw Valley and its counsel "to make unverified statements and arguments without record citations, or any effort to participate directly in the instant inquiry."⁵ But because of the unusual nature of this case and intervenor's role in the earlier suspension hearing, the Board concluded that "the public interest would be served by *requiring* [Saginaw Valley] to take the responsibility of analyzing the record, including the exhibits and transcripts of testimony." *Ibid.* (emphasis added). The Board thus gave intervenor over six weeks to file a brief and proposed findings with appropriate citations to the record. Saginaw Valley made no response whatsoever to the Board's order and offer of a last chance to participate.

We agree with appellees' arguments that the appeal should be dismissed. Our decisions have

emphasized the importance of the submission of proposed findings and put litigants on notice that a default in the performance of this obligation would be taken into account in any challenge on appeal to the findings of the Licensing Board. . . . Failing either to raise satisfactorily a particular issue or (once the record has been closed) to express [it]self in the prescribed manner regarding how that issue should be resolved, [an intervenor] is scarcely in a position, legally or equitably, to protest the determinations made by the Board in connection with it.

Northern States Power Co. (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-244, 8 AEC 857, 864, *reconsideration denied*, ALAB-252, 8 AEC 1175 (1974), *aff'd*, CLI-75-1, 1 NRC 1 (1975). Requiring the submission to a

⁵ The Board regrettably offered no explanation for the ten-month delay between its receipt of counsel's January 1980 letter and the issuance of its order. It does not appear, however, that any party was prejudiced by this time lapse.

licensing board of proposed findings or a comparable document is not a mere formality: it gives that board the benefit of a party's arguments and permits it to resolve them in the first instance — possibly in the party's favor, obviating later appeal. Thus, unless there is "a serious substantive issue as to which a genuine problem has been demonstrated, we ordinarily will not entertain an issue raised for the first time on appeal." *Tennessee Valley Authority* (Hartsville Nuclear Plant, Units 1A, 2A, 1B, and 2B), ALAB-463, 7 NRC 341, 348 (1978). See also *Public Service Electric and Gas Co., et al.* (Salem Nuclear Generating Station, Unit 1), ALAB-650, 14 NRC 43, 49 (1981).

Though purporting to preserve a right to appeal, Saginaw Valley's January 1980 letter to the Licensing Board did not. Apart from its untimeliness, it contained no references to the record in this proceeding and no relevant argument. It also made no mention at all of sanctions, which had been clearly identified as an issue for pursuit at the hearing (see 44 *Fed. Reg.* 35061, *supra*) and is the only matter that Saginaw Valley seeks to raise here on appeal. Instead, the letter amounted to an unfocused attack on licensee generally. But most significant is the fact that, after the Licensing Board specifically solicited a brief and proposed findings from it, Saginaw Valley totally failed to respond. See *Wright v. Hartford Accident & Indemnity Co.*, 580 F.2d 809, 810 (5th Cir. 1978).⁶

Saginaw Valley's counsel argues before us that he did not respond to the Licensing Board's November 1980 order because he (1) believed that the record and the findings of fact filed by others "adequately brought out what was at issue," (2) had nothing to add, and (3) was "in the hole \$125,000" for expenses and legal fees already incurred in this proceeding. App. Tr. 11. See also App. Tr. 5-23. But a party that makes such litigation judgments assumes the risk that its reliance on the proposed findings of others is misplaced, and it must be prepared to live with the consequence that its further appeal rights will be waived. Cf. *Duke Power Co.* (Cherokee Nuclear Station, Units 1, 2 and 3), ALAB-440, 6 NRC 642, 644-645 (1977).⁷ Parties may not dart in and out of proceedings on their own terms and at their convenience and still expect to enjoy the benefits of full participation without the responsibilities.

This is not a case involving "a serious substantive issue as to which a genuine problem has been demonstrated," requiring our consideration despite intervenor's waiver of its appeal rights. *Hartsville, supra*, 7 NRC at 348. In any event, as discussed below in Part III, we have reviewed *sua sponte* the entirety of the

⁶ Indeed, this is at least the third occasion on which Saginaw Valley, represented by the same counsel as here, has failed to fulfill its responsibilities as an AEC/NRC litigant and has been chastised for it. See *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-270, 1 NRC 473, 474-476 (1975); *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-123, 6 AEC 331, 332-334 (1973). Thus, we should not have to repeat here our discussion in those cases concerning a party's obligations.

⁷ At a minimum, we believe Saginaw Valley was obliged to respond to the order by informing the Board of its decision not to file formal findings or a brief.

Licensing Board's decision, and our disposition upon that review makes reaching the sanctions issue unnecessary. In these circumstances, we find no basis for entertaining Saginaw Valley's arguments and therefore dismiss its appeal.⁸

III.

Regardless of whether there is an appeal, "[i]t is our practice . . . to review *sua sponte* 'any final disposition of a licensing proceeding that either was or had to be founded upon substantive determinations of significant safety or environmental issues.'" *Sacramento Municipal Utility District* (Rancho Seco Nuclear Generating Station), ALAB-655, 14 NRC 799, 803 (1981), quoting from *Washington Public Power Supply System* (WPPSS Nuclear Project No. 2), ALAB-571, 10 NRC 687, 692 (1979) (emphasis in original). On the other hand, we do not ordinarily scrutinize licensing board rulings on economic issues, intervention requests, or procedural matters in the absence of a properly perfected appeal. *Louisiana Power and Light Co.* (Waterford Steam Generating Station, Unit No. 3), ALAB-258, 1 NRC 45, 48 n.6 (1975); *Washington Public Power Supply System* (Nuclear Projects No. 1 and No. 4), ALAB-265, 1 NRC 374, 375 n.1 (1975); *Boston Edison Co.* (Pilgrim Nuclear Power Station, Unit 1), ALAB-231, 8 AEC 633-634 (1974). The Licensing Board decision before us does not fit within either category. It does, however, involve the integrity of the hearing process and was the result of our expressed concern in ALAB-458, 7 NRC at 177 n.87, that the Consumers Power-Dow relationship "be fully aired and resolved." In such circumstances, we believe that a *sua sponte* review of the Board's decision is warranted.⁹

By so doing, we do not intend to resolve every factual dispute or discrepancy noted by the parties (in particular, Consumers Power and Dow). No one has excepted to the Licensing Board's statement of the facts, and it is not our function in this limited type of review to undertake a detailed scrutiny of the entire record. Rather, we address only those portions of the Board's opinion that we believe deserve clarification or correction. And our absence of comment on a particular

⁸ Pending before us are two motions by Saginaw Valley to strike the reply briefs of Consumers Power and Dow. Saginaw Valley argues that these briefs do not respond directly to its challenge to the Board's conclusions of law regarding sanctions, but rather attack the Board's underlying findings of fact. Saginaw Valley contends that because neither it nor appellees took exception to any of these factual findings, appellees are thereby precluded from disagreeing with or attacking them.

In view of the dismissal of Saginaw Valley's appeal we deny both of its motions as moot. Even if its appeal were not dismissed, however, we would still deny the motions. Although parties not adversely affected by the ultimate outcome of a licensing board decision may not appeal that decision, they may "defend a result in their favor on any ground presented in the record, including one rejected below." *Public Service Co. of Oklahoma, et al.* (Black Fox Station, Units 1 and 2), ALAB-573, 10 NRC 775, 789 (1979), and cases cited.

⁹ See also our unpublished order of April 8, 1982, at 2-3, granting the AIF Lawyers Committee permission to file an *amicus curiae* brief and declaring our intent to review *sua sponte* the Board's decision as a whole.

Board statement should not be construed as either agreement or disagreement with it.¹⁰

We expressly defer, however, our *sua sponte* review of the Licensing Board's disposition of the radon issue.¹¹ As pointed out in note 2, *supra*, the Commission in November 1978 directed the Board to address the environmental effects of radon at the same time it was to inquire into the matter of Consumers Power's conduct during the earlier suspension hearing. Consumers Power and the Staff contended that the record in *Perkins*, note 11, *supra*, provided adequate evidence concerning the effects of radon on which the Board could rely in this case. Consequently, they did not request additional hearings, nor did any of the intervenors. 14 NRC at 1772-1773, 1786, 1789.

The radon issue has been actively litigated in several consolidated cases. In *Philadelphia Electric Co., et al.* (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-640, 13 NRC 487 (1981), we reviewed the *Perkins* record and quantified the radon emissions attributable to the mining and milling of uranium fuel. Still being litigated and under consideration is the question of the health effects of those emissions. See *id.* at 543-545. It would not be fair to the parties in *Peach Bottom* for us to review, in the context of this proceeding, the very radon issue that they are now actively litigating. Further, there would be the potential for our reaching prejudicial or inconsistent conclusions, were we to review the *Midland* Licensing Board's radon findings. For these reasons, we believe it preferable to await the issuance of the *Peach Bottom* health effects decision before undertaking our *sua sponte* review of radon here. Accordingly, we retain jurisdiction over this portion of the Board's *Midland* decision. See *Northern States Power Co.* (Monticello Nuclear Generating Plant, Unit 1), ALAB-611, 12 NRC 301, 304, 309 (1980).

¹⁰ During the briefing of Saginaw Valley's appeal, Dow moved for leave to file a second brief in response to the brief of fellow appellee Consumers Power. In an unpublished order (April 13, 1982) we denied the motion, finding no sufficient cause for departing from the traditional scheme of briefing, in which co-appellees do not have the opportunity to respond to one another. Dow then moved for reconsideration, tendering a brief in reply to Consumers Power. It argued that, as to the matter of Dow's involvement in any allegedly improper activity during the preparation of testimony for the suspension hearings, Dow and Consumers Power are not "on the same side" and have differing interests; thus, Dow argued it should be permitted to respond to Consumers Power in a separate brief.

The dismissal of Saginaw Valley's appeal technically moots Dow's motion, just as it moots Saginaw Valley's motions to strike. See note 8, *supra*. But given our decision to review the matter *sua sponte* and the obvious effort expended by all parties to brief the case, we strike no brief and consider all seven as essentially *amici* briefs.

¹¹ Specifically, the Board found "no reason to disagree with the conclusion [of *Duke Power Co.* (*Perkins* Nuclear Station, Units 1, 2, and 3), LBP-78-25, 8 NRC 87, 100 (1978)] that the radon effects from uranium fuel supply to nuclear plants are negligibly small compared to the effects of natural radon emissions, and are therefore not significant." 14 NRC at 1789.

IV.

Turning to the alleged attempt by Consumers Power to prevent the full disclosure of certain information about its contractual relationship with Dow, we are satisfied that this matter has been “fully aired and resolved.” ALAB-458, *supra*, 7 NRC at 177 n.87. The Licensing Board has done a thorough and commendable job of investigating these charges, setting forth the facts, and reporting its conclusions. We see no basis for suspecting that “there may have been similar ploys [*i.e.*, attempts to withhold material information] which were successful.” LBP-77-57, *supra*, 6 NRC at 486. Nonetheless, we are troubled by certain aspects of the Licensing Board’s opinion, particularly insofar as they have implications for future cases. It is these matters that we address in our *sua sponte* review.

A.

An applicant or licensee has an obligation in NRC proceedings to provide “accurate and timely information.” *Petition for Emergency and Remedial Action*, CLI-78-6, 7 NRC 400, 418 (1978). See also *Tennessee Valley Authority* (Browns Ferry Nuclear Plant, Units 1, 2 and 3), ALAB-677, 15 NRC 1387 (1982). The source of this obligation is the Atomic Energy Act itself. Section 186a, 42 U.S.C. 2236a, provides, as pertinent (emphasis added):

Any license may be revoked for any *material false statement* in the application or any statement of fact required under section 182 [which authorizes the Commission to determine the information necessary for a license application], or because of conditions revealed by such application or statement of fact or any report, record, or inspection or other means which would warrant the Commission to refuse to grant a license on an original application. . . .

In *Virginia Electric and Power Co.* (North Anna Power Station, Units 1 and 2), CLI-76-22, 4 NRC 480 (1976), *aff’d sub nom. Virginia Electric and Power Co. v. Nuclear Regulatory Commission*, 571 F.2d 1289 (4th Cir. 1978), the Commission expounded on the phrase “material false statement.” First, it concluded that knowledge of falsity is not necessary for liability under Section 186. Otherwise, the Commission reasoned, an “applicant would have a reduced incentive to insure that its consultants, contractors, and employees were meeting the highest standards in their work.” *Id.* at 486. Second, the Commission found that materiality depends on whether the information is capable of influencing the decisionmaker—not on whether the decisionmaker would, in fact, have relied on it. *Id.* at 487, 491. Recognizing the often fine line between material and nonmaterial information, the Commission emphasized that such “determinations . . . require careful, common-sense judgments of the context in which information appears and the stage of the licensing process involved.” *Id.* at 491. See also *id.* at 487-488. Third, the

Commission concluded that “material false statement” encompasses omissions as well as affirmative statements.¹² Observing that it must have “access to true *and* full information so that it can perform its job,” the Commission pointed out that “[s]ilence can be remarkably expressive.” *Id.* at 489 (emphasis in original).¹³

The charge here was that Consumers Power had not fully disclosed, during the suspension hearing, assertedly important facts concerning its contract for the sale of process steam to Dow. See pp. 903-05, *supra*. The focus of the Board’s inquiry below was thus necessarily on whether Consumers Power’s actions constituted a material false statement in violation of Section 186.¹⁴ The Licensing Board, however, did not expressly find or identify any such violation by Consumers Power.¹⁵ Instead, it found that “the parties and their lawyers took an improperly narrow view of their duty affirmatively to disclose significant information to the Board.” 14 NRC at 1800. See also *id.* at 1790, 1794.

This “improperly narrow view” was manifested in several ways. According to the Board, the *prefiled direct* testimony in support of Consumers Power should have included a more candid description of the Consumers Power-Dow relationship.¹⁶ Specifically, Consumers Power should have voluntarily revealed at the outset that (1) the Michigan Division of Dow — which reports to Dow USA, the corporate entity responsible for entering into the process steam contract — no longer found the contract with Consumers Power advantageous; (2) some Dow officials were influenced by Consumers Power’s threat of a breach of contract suit and considered bringing suit themselves against the utility; and (3) the principal witness on the contract, Joseph G. Temple, General Manager of the Michigan Division, was personally dissatisfied with it. *Id.* at 1790-1791, 1794-1799, 1800. The Board found that the parties had a duty to disclose this information. In its view, “[i]f counsel have any doubts whether disclosure of particular material is required, . . . that information should be disclosed.” *Id.* at 1796. For instance, the fact that Consumers Power’s counsel held a meeting to discuss whether to include in the

¹² In so concluding, the Commission overruled our contrary holding in the same case. See ALAB-324, 3 NRC 347, 360-363 (1976).

¹³ These *North Anna* principles are in accord with the Commission’s “General Policy and Procedure for NRC Enforcement Actions,” issued after the Licensing Board’s decision. See 10 CFR Part 2, Appendix C, 47 Fed. Reg. 9987 (March 9, 1982), as corrected, 47 Fed. Reg. 16005 (April 14, 1982). “Material false statement” is defined there as “a statement that is false by omission or commission and is relevant to the regulatory process.” 47 Fed. Reg. at 9995 n.16.

¹⁴ The Board identified the second issue for hearing as “[w]hether there was a failure to make affirmative full disclosure on the record of the material facts relating to Dow’s intentions concerning performance of its contract with Consumers.” 14 NRC at 1776.

¹⁵ With the exception of the fifth issue dealing with sanctions, the Board never directly answered any of the issues it identified for hearing.

¹⁶ The Board noted, however, that all of the information it considered important “was ultimately included in the record of the suspension proceedings.” 14 NRC at 1801. Moreover, much of this information apparently was made available to intervenors and the Staff shortly before the hearing. Consumers Power Brief (April 5, 1982) at 19 n.14, 35-36; App. Tr. 51, 88-92, 95-96, 100. Compare App. Tr. 34-35.

Temple testimony the Michigan Division position on the contract “sufficiently demonstrate[d] . . . such doubts” to the Board. *Ibid.* See also *id.* at 1792. The Board also found that the parties had an “attitude favoring limited disclosure” as reflected primarily in various internal corporate memoranda and notes. *Id.* at 1795.¹⁷

The principal problem with the Licensing Board’s analysis is that it fails to explain how the parties’ “improperly narrow view” of their duty of affirmative disclosure constitutes a “material false statement” under Section 186, as interpreted and applied by the Commission in *North Anna*. To be sure, the Board describes the information that was omitted from the prefiled direct testimony on behalf of Consumers Power and indicates that this omission “could have created an unwarranted impression on the part of the Licensing Board.” *Id.* at 1791. It neglects to elaborate, however, on why this is material — *i.e.*, how it was capable of influencing the decisionmaker.¹⁸

For example, the Board implies, but does not explain, that the Suspension Board could have somehow been influenced by the fact that the Michigan Division of Dow was no longer enthusiastic about the contract with Consumers Power. But we fail to see the materiality of this type of internal corporate dispute to the issue there at hand — Dow’s need for the power to be generated by the Midland facility. The Licensing Board has given undue emphasis to differences of opinion that are inevitable within any organization. The only material and relevant consideration here is the testimony sponsored by the entity ultimately responsible for contracting with Consumers Power, Dow USA: that “Dow intends to purchase process steam from Consumers beginning the first year of operation (1982).” Temple Testimony, fol. Tr. 220 (suspension hearing), at 8.

The failure to disclose an internal corporate disagreement of the type found here is clearly distinguishable from the failure to disclose seismic information, which was found to constitute a material false statement in *North Anna*, *supra*. The former involves matters of business or commercial prerogative with which we are not ordinarily concerned. That certain persons or entities within a corporate structure disagree with the senior company officials who have the decisionmaking responsibility in such matters is of no consequence, absent fraud, misrepresentation, or the like.¹⁹ The information withheld in *North Anna*, on the other hand,

¹⁷ For example, the Board discussed notes relating to a Consumers Power suggestion to “finesse” its contract dispute with Dow. *Id.* at 1790, 1792-1793.

¹⁸ The Commission emphasized in *North Anna*, *supra*, 4 NRC at 488 n.6, that “an omission must be material to be punishable.” See also *id.* at 491.

¹⁹ The Licensing Board, while finding “no conspiracy to countenance perjury or to commit fraud,” suggested that Dow’s expressed intent to abide by its contract was disingenuous and improperly motivated by Consumers Power’s assertion of its contractual rights. 14 NRC at 1801, 1794-1795. The Board also questioned Dow’s intent because Dow considered the option of suing Consumers Power. *Id.* at 1791. We do not regard these events with as great a concern as did the Licensing Board. Each side may well have been influenced by the legal posturing of the other. But many entirely appropriate

(Continued)

consisted of scientific data and the existence of seismic studies undertaken by the licensee. See 4 NRC at 482-483, 491-492. As the Commission pointed out, *id.* at 492, this is clearly the kind of information that agency experts must evaluate. See generally *Pacific Gas and Electric Co. (Diablo Canyon Nuclear Power Plant, Units 1 & 2)*, CLI-82-1, 15 NRC 225 (1982) (in statement directing the issuance of a Notice of Violation, Commission found reason to believe that applicant's statements at public meeting with NRC Staff concerning applicant's assertedly independent relationship with its consultant on seismic reverification program constituted "material false statements").

In any event, we believe that the Dow testimony accurately reflected the Dow position and did not create any "unwarranted impression" about that firm's satisfaction with the contract.²⁰ In the first place, the prepared testimony did not, in fact, constitute an unqualified commitment to continue the contractual relationship with Consumers Power. Indeed, after noting the "continuous review since May of 1974" of the contracts, Mr. Temple stated that

at the present time circumstances have not changed sufficiently to call for a modification of Dow's commitment to nuclear produced steam to be supplied by Consumers Power in March of 1982. *Under the present circumstances as known to Dow*, the nuclear alternative remains the most attractive one economically. *Further, the matter will be kept under continuous review and Dow will keep all of its options open.*

Temple Testimony, *supra*, at 2-3 (emphasis added). Mr. Temple went on to state that there were "active negotiations" between the two parties "concerning possible modifications" of the contracts, noting that time and cost factors were critical to Dow. *Id.* at 6-8. See also *id.* at 4-6. Further, Mr. Temple stated that "Dow cannot be expected to wait beyond a reasonable time for the completion of the nuclear power plant and commencement of the reliable delivery of contract quantities of process steam," and emphasized that "there can be *no* contractual restrictions on Dow's right to make, purchase and utilize process steam and electric power at any time at [Dow's] Midland Plant." *Id.* at 7 (emphasis in original). See also App. Tr. 79-80; Tr. 2281, 2306-2307 (suspension hearing); Tr. 53,468, 53,548-53,570.²¹

We recognized in ALAB-458, *supra*, 7 NRC at 168, that "financial and other considerations might result in Dow's being unwilling to enter into a similar arrangement if the choice were before it today." But we nevertheless found

business judgments are made on such a basis — *i.e.*, avoidance of a breach of contract suit. Further, as explained at pp. 913-14, *infra*, we see no convincing evidence that undercuts Dow's expressed intent to go ahead with the contract.

²⁰ As observed earlier, the proponent of that testimony was Mr. Temple, who, as General Manager of the Michigan Division, was less satisfied with the contract than Dow USA, the corporate superior of his division.

²¹ It must also be kept in mind that this prefiled direct testimony and other documents made available before and at the suspension hearing were revealing enough to trigger the cross-examination by intervenors that revealed the Michigan Division's dissatisfaction with the contract. See note 16, *supra*.

“convincing evidence that Dow’s present intention is to adhere to the contract’s terms.” *Ibid.* (footnote omitted). The Licensing Board’s further inquiry into this matter gives us no reason to conclude otherwise now. Dow’s testimony accurately reflected the corporate position on the Consumers Power contract at the time of the suspension hearing. Compare *United States Department of Energy* (Clinch River Breeder Reactor Plant), CLI-82-22, 16 NRC 405 (1982).²²

In general, we agree with the Licensing Board’s view that, if a party has doubts about whether to disclose information, it should do so. See 14 NRC at 1792, 1796. This is because the ultimate decision with regard to materiality is for the decision-maker, not the parties. We part company with the Board, however, to the extent it suggests that the mere existence of a question or discussion about the possible materiality of information *necessarily* makes the information material. See *id.* at 1796. We also disagree with the Board’s notion that drafts of prepared testimony are ordinarily material and should be disclosed. See *id.* at 1794. In each instance, such information may or may not be material, depending on the circumstances and proper application of the test for materiality.

The standard for materiality commonly invoked by the courts and adopted by the Commission in *North Anna, supra*, is whether the information involved is capable of influencing a decisionmaker. 4 NRC at 487-488, 491. See also our discussion of materiality in ALAB-324, note 12, *supra*, 3 NRC at 358-360. Recognizing that application of this test may not always be simple, the Commission provided further guidance: use common sense and consider the context and stage of the licensing process in which the materiality issue arises. 4 NRC at 487-488, 491. The Licensing Board’s rule, in our view, conflicts with this “common sense and context” approach.²³ A well-prepared lawyer or party will review and evaluate for materiality enormous amounts of factual and legal information in the course of engaging in virtually any type of NRC proceeding. Strict adherence to the Board’s standards would greatly overburden already voluminous records with largely extraneous matter, possibly distracting the licensing boards and the parties from the more serious issues. Thus, rather than endorsing this broader and more inflexible standard for materiality, we prefer to emphasize the Commission’s call in *North Anna* for the exercise of simple good judgment when determining whether to disclose possibly material information.

The Licensing Board, in our view, also gave too much weight to the attitudes and asserted intentions of the parties and their representatives to deceive the Suspension Board and other parties. See, *e.g.*, 14 NRC at 1795. Intent, however,

²² We think it noteworthy that in June 1978 Consumers Power and Dow signed new contracts containing an explicit Dow commitment to the Midland project in contemplation of commercial operations by the end of 1984. See Consumers Power Exhibit 1, Documents 17, 18, 19, 20; Tr. 53,999-54,000.

²³ At oral argument before us, counsel for Saginaw Valley agreed that the Licensing Board’s standard was erroneous. App. Tr. 33.

is not a prerequisite for a material false statement. This logically follows from the Commission's holding in *North Anna* that knowledge of the falsity of a material statement is not a necessary element of a Section 186 violation. 4 NRC at 486-487. See pp. 910-11, *supra*. If one's knowledge of falsity is irrelevant, *a fortiori* one's intention to deceive (which is necessarily a function of knowledge) is likewise irrelevant in determining whether a violation has been committed. In other words, a material false statement may be found, irrespective of whether an applicant or a licensee intended to make such a statement.

This is not to say that intent plays no role whatsoever in cases involving allegations of Section 186 violations. Certainly a party's deliberate effort to mislead the agency is relevant to the matter of sanctions, once a material false statement has been found. See the Commission's "General Policy and Procedure for NRC Enforcement Actions," note 13, *supra*, 10 CFR Part 2, Appendix C, 47 *Fed. Reg.* at 9990, 9991, 9995 & n.15.²⁴ But here, where no material false statement has been shown, there is no justification for the Board's substantial attention to and apparent reliance on the parties' attitudes and intentions.²⁵

At the conclusion of its decision, the Licensing Board acknowledged that "the high standards of affirmative disclosure and other conduct . . . described herein[] have not previously been specifically addressed by the NRC Appeal Board or the Commission." 14 NRC at 1801. We agree that the Board's opinion, as discussed above, does plow new ground. But we see no warrant — at least on the facts of this case — for departing from or embellishing the existing statutory and case law (specifically, *North Anna*) concerning a licensee's or an applicant's obligation to provide "accurate and timely information." CLI-78-6, *supra*, 7 NRC at 418. We therefore reject any notion that it was necessary to develop new standards for party conduct.

B.

Our comments in the previous section dealt primarily with a licensee's or an applicant's responsibility of full and accurate disclosure of all material information. The Board below, however, also addressed to a lesser degree the obligations of counsel. In this area as well, we believe that the Board has formulated some new standards that are neither necessary nor desirable.

²⁴ Of course, determining one's intent is often a formidable task.

²⁵ Information concerning a licensee's or an applicant's intent may also call into question its "character" — a matter the Commission is authorized to consider under Section 182a of the Atomic Energy Act, 42 U.S.C. 2232a — or its ability and willingness to comply with agency regulations, as Section 103b, 42 U.S.C. 2133b, requires. We do not find (nor did the Licensing Board) the evidence in this particular proceeding sufficient to cast serious doubt on the licensee's overall character or ability to abide by agency requirements. But see p. 919, *infra*.

Two aspects of the Licensing Board's decision in this regard cause us concern. First, the Board criticized Consumers Power's counsel for asserting a claim of work product privilege against disclosure of the drafts of the Temple testimony. According to the Board, there was "no basis for claiming that testimony, ostensibly the work of a witness rather than an attorney, is privileged." 14 NRC at 1793. It found "[n]o credible argument" could be made on this point and expressed surprise that Consumers Power "could genuinely believe that the materials were privileged." *Id.* at 1793, 1794. Second, the Board expressed its dissatisfaction with the role played by counsel for both Consumers Power and Dow in the preparation of the Temple testimony. Characterizing this testimony as "prepared and massaged primarily by the lawyers," the Board found this to be "the reverse of the proper procedure for preparing written testimony." *Id.* at 1799 (footnote omitted). In its view, the words used must be those of the witness; attorneys may only suggest clarification of vague or confusing portions of the statement, suggest omission of totally irrelevant material, and select questions to be answered as if on examination at oral hearing. *Ibid.*

In neither instance did the Licensing Board explicitly find that counsel had violated any agency or other rules of conduct. It did, however, suggest that there may have been unintentional "unethical conduct" on their part. *Id.* at 1801. But we see no basis for criticizing counsel for either their assertion of privilege or their role in preparation of testimony. We also perceive no need to alter the existing standards for lawyer conduct before the NRC.

The Commission's Rules of Practice require "parties and their representatives . . . to conduct themselves with honor, dignity, and decorum as they should before a court of law." 10 CFR 2.713(a). The majority of courts in this country have adopted the American Bar Association's Code of Professional Responsibility. That code is comprised of nine Canons of Ethics, each accompanied by Ethical Considerations and Disciplinary Rules, which further flesh out the Canons. The Commission thus generally follows the ABA Code in judging lawyer conduct in NRC proceedings. See, e.g., *Northern Indiana Public Service Co.* (Bailly Generating Station, Nuclear-1), ALAB-204, 7 AEC 835, 838 (1974). See also 45 *Fed. Reg.* 69877, 69878 (October 22, 1980).²⁶

Applying the ABA Code to this case, we believe the Licensing Board's condemnation of Consumers Power's counsel for asserting the work product privilege as to the drafts of the Temple testimony was unjustified. Canon 7 requires a lawyer to represent his or her client "zealously within the bounds of the law." These bounds are not always easy to ascertain. Ethical Consideration 7-2. They include, however, "urg[ing] any permissible construction of the law favorable to [a

²⁶ By the same token, the ABA Code itself applies to lawyers appearing before administrative agencies. See, e.g., Ethical Consideration 7-15.

lawyer's] client, without regard to his [or her] professional opinion as to the likelihood that the construction will ultimately prevail." Ethical Consideration 7-4 (footnote omitted). A "permissible" argument is any nonfrivolous position supported by the law or by a good faith argument for extension, modification, or reversal of existing law. *Ibid.* The very cases cited by the Licensing Board in its discussion of this point, in our view, make arguing for the extension of the work product privilege to the drafts of Mr. Temple's testimony just such a permissible position.

Most pertinent is *Hickman v. Taylor*, 329 U.S. 495 (1947). There the Court pointed out that "[p]roper preparation of a client's case demands that [a lawyer] assemble information, sift what he considers to be the relevant from the irrelevant facts, prepare his legal theories and plan his strategy without undue and needless interference." *Id.* at 511. This lawyer work product is encompassed in "interviews, statements, memoranda, correspondence, briefs, mental impressions, personal beliefs, and *countless other tangible and intangible ways*" and is generally considered privileged information. *Id.* at 511-512 (emphasis added). We have been unable to locate any federal or state decision that specifically extends or declines to extend the Court's definition of lawyer work product to drafts of witness testimony. Thus, given the broad language of *Hickman*, we believe counsel for Consumers Power was sufficiently justified in raising the claim of privilege and did not deserve the Licensing Board's implicit censure.²⁷

Similarly, we disagree with the Licensing Board's narrow view of the proper role of the lawyer in testimony preparation. Again, Canon 7's exhortation to lawyers to represent their clients "zealously within the bounds of the law" is our starting point. Related Ethical Consideration 7-26 provides (footnotes omitted):

The law and Disciplinary Rules prohibit the use of fraudulent, false, or perjured testimony or evidence. A lawyer who knowingly participates in introduction of such testimony or evidence is subject to discipline. A lawyer should, however, present any admissible evidence his client desires

²⁷ This is particularly so, given that the Suspension Board considered the question to be a "toss up." Tr. 1000 (suspension hearing).

Moreover, a federal case decided after the submission of post-hearing briefs at this stage of the proceeding but before issuance of the Licensing Board's opinion lends further support to the work product privilege claim. *In re Grand Jury Subpoena Dated November 8, 1979*, 622 F.2d 933 (6th Cir. 1980), extended the privilege to drafts of "submissions" by a chemical company to the Food and Drug Administration. The Board duly noted this decision but distinguished it on the basis that testimony is "the sworn statement of the witness, not the attorney," whereas most agency "submissions" are "briefs or argument." 14 NRC at 1794 & n.59.

Although we need not, and therefore do not, decide the correctness of this ruling, we are compelled to express our considerable doubt that the Sixth Circuit intended that its use of "submissions" be construed so narrowly. The grand jury's questions suggest that these "documents" were not briefs or similar pleadings, but rather factual statements jointly prepared by counsel and employees of its client, not unlike the Temple testimony here. 622 F.2d at 934 n.1. It is also noteworthy that the grand jury asked questions about these documents pursuant to its investigation of whether any attorney or employee of the chemical company "had made false, fictitious or fraudulent statements to the FDA during its prior investigation." *Id.* at 935.

to have presented unless he knows, or from facts within his knowledge should know, that such testimony or evidence is false, fraudulent, or perjured.

Ethical Consideration 7-27 proscribes as well the suppression of evidence that a lawyer or his or her client is obliged to reveal. The pertinent Disciplinary Rule (7-102) states (footnotes omitted):

- (A) In his representation of a client, a lawyer shall not: * * *
 - (3) Conceal or knowingly fail to disclose that which he is required by law to reveal.
 - (4) Knowingly use perjured testimony or false evidence.
 - (5) Knowingly make a false statement of law or fact.
 - (6) Participate in the creation or preservation of evidence when he knows or it is obvious that the evidence is false.
 - (7) Counsel or assist his client in conduct that the lawyer knows to be illegal or fraudulent.
 - (8) Knowingly engage in other illegal conduct or conduct contrary to a Disciplinary Rule.
- (B) A lawyer who receives information clearly establishing that:
 - (1) His client has, in the course of the representation, perpetrated a fraud upon a person or tribunal shall promptly call upon his client to rectify the same, and if his client refuses or is unable to do so, he shall reveal the fraud to the affected person or tribunal, except when the information is protected as a privileged communication.
 - (2) A person other than his client has perpetrated a fraud upon a tribunal shall promptly reveal the fraud to the tribunal.

See also Ethical Consideration 8-5.

We believe that these considerations and rules provide adequate standards by which an attorney should abide in the preparation of testimony for NRC proceedings. The key factor is not who originated the words that comprise the testimony, but rather whether the witness can truthfully attest that the statement is complete and accurate to the best of his or her knowledge.²⁸ Thus, we have no quarrel with the Licensing Board's general statement that "the situation should never arise . . .

²⁸ In response to the request of counsel for Consumers Power, the Legal Ethics Committee of the District of Columbia Bar issued an opinion on the subject of a lawyer's participation in preparing the testimony of witnesses. The Committee concluded:

[A] lawyer may not prepare, or assist in preparing, testimony that he or she knows, or ought to know, is false or misleading. So long as this prohibition is not transgressed, a lawyer may properly suggest language as well as the substance of testimony, and may — indeed, should — do whatever is feasible to prepare his or her witnesses for examination.

Opinion No. 79 (December 18, 1979). This opinion was issued after the closing of the record and filing of post-hearing briefs. Counsel provided the Licensing Board and parties with a copy on January 7, 1980, but the Board chose not to mention it in its decision. Although not bound by the opinion, we agree fully with its reasoning and application of Ethical Consideration 7-26 and Disciplinary Rule 7-102 to the question posed.

where one could question whether in fact the testimony is uttered by the witness or negotiated by the attorneys.” 14 NRC at 1799 (footnote omitted). We do, however, dispute the Board’s assertion that that was the case here. As discussed above, there is no evidence on this record that the Temple testimony did not accurately and fully reflect the then-*corporate* position of Dow on its contract with Consumers Power. See pp. 913-14, *supra*.

C.

Having expressed our disagreement with these various aspects of the Licensing Board’s decision, we are equally compelled to identify one significant area of agreement: “[t]he [Suspension] Board should not have been subjected to gamesmanship between or among lawyers.” 14 NRC at 1800. Our opinion thus should not be read as condoning or encouraging what the parties themselves have characterized as “sporting conduct.” See, *e.g.*, App. Tr. 56, 57, 60, 81.²⁹

Initially, we emphasize that we can judge a party only on the basis of its actual conduct — not on the misguided musings of its lawyers. Accordingly, we have found no *punishable* conduct here. We are obliged to reach that decision on the basis of the record and the prevailing law. And as discussed throughout this opinion, we agree with all the parties that the record is complete, and we see no warrant for changing the existing legal standards against which the facts must be measured.

Nevertheless, some of the pre-suspension hearing activity described by the Licensing Board has the strong potential for compromising the licensing process to the public detriment. See generally 14 NRC at 1790-1793. Counsel and parties who engage in such conduct risk violating the statute and other Commission authority. Where that threshold is crossed, we will have no hesitation in imposing appropriate sanctions and taking whatever other measures are necessary to ensure no recurrences. What we said at an earlier stage of this proceeding bears repeating:

Insofar as the integrity of the proceedings or the good faith of the parties is concerned, there is no parallel between zealous advocacy in support of an arguable legal position and, *e.g.*, the withholding of relevant factual information. We note that in the latter regard we fully expect both clients and lawyers to adhere to the highest standards.

ALAB-458, *supra*, 7 NRC at 172 n.64.

²⁹ The District of Columbia Circuit observed in a recent case involving the Federal Communications Commission equivalent of a material false statement:

As a licensing authority, the Commission is not expected to “play procedural games with those who come before it in order to ascertain the truth,” . . . and license applicants may not indulge in common-law pleading strategies of their own devise.

RKO General, Inc. v. Federal Communications Commission, 670 F.2d 215, 229 (D.C. Cir. 1981), *cert. denied*, 102 S.Ct. 1974, 2931 (1982).

For the reasons set forth above, (1) Saginaw Valley's appeal is *dismissed*; (2) Saginaw Valley's two motions to strike the reply briefs of Consumers Power and Dow are *denied as moot*; (3) Dow's motion for reconsideration of our order denying it leave to file a brief in response to Consumers Power is *denied as moot*; (4) pursuant to *sua sponte* review, the Licensing Board's decision not to impose sanctions is *affirmed*; and (5) *sua sponte* review of the radon issue is *deferred*.
It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Alan S. Rosenthal, Chairman
Dr. John H. Buck
Dr. W. Reed Johnson

In the Matter of

Docket No. 50-320-OLA

METROPOLITAN EDISON COMPANY,
et al.

(Three Mile Island Nuclear
Station, Unit No. 2)

September 14, 1982

Following the conduct of additional evidentiary hearings by the Appeal Board on the probability of a heavy aircraft (one weighing more than 200,000 pounds) crashing into the TMI-2 plant, the Board finds the analyses performed by the NRC Staff and the applicants produced acceptable results based upon data then at hand (pre-1978 data). As to any future return of the plant to service, the Appeal Board requires an updated analysis of the crash probability prior to its operation (and at least once every three years thereafter), and such protective action as the analysis might indicate.

TECHNICAL ISSUES DISCUSSED:

Aircraft crash probability;
Bayesian Theory;
Confidence limits (precision, uncertainty).

APPEARANCES

Messrs. George F. Trowbridge and Alan Weisbard, Washington, D.C., for the applicants, Metropolitan Edison Company, Jersey Central Power and Light Company, and Pennsylvania Electric Company.

Dr. Chauncey R. Kepford, State College, Pennsylvania, for the intervenors, Citizens for a Safe Environment and York Committee for a Safe Environment.

Ms. Karin W. Carter, Assistant Attorney General of Pennsylvania, Harrisburg, Pennsylvania, for the Commonwealth of Pennsylvania.

Messrs. Lawrence J. Chandler, Joseph F. Scinto, Stuart A. Treby and Richard J. Black for the Nuclear Regulatory Commission staff.

DECISION

In December 1977, the Licensing Board issued an initial decision authorizing the grant of an operating license for Unit No. 2 of the Three Mile Island facility. LBP-77-70, 6 NRC 1185. Intervenors Citizens for a Safe Environment and the York Committee for a Safe Environment appealed from that decision on several grounds. On July 19, 1978, we affirmed the Licensing Board's decision in part. We deferred ruling on a remaining issue relating to the probability of a crash of a heavy airplane into the plant, pending further evidentiary hearings on the matter. ALAB-486, 8 NRC 9.¹ We now decide that question.²

¹ Also deferred was the unrelated issue of the environmental effects of radon-222 attributable to operation of the TMI-2 facility. See 8 NRC at 13. Following further evidentiary hearings in a consolidated proceeding on this issue, we handed down a partial decision on the matter. *Philadelphia Electric Co., et al.* (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-640, 13 NRC 487 (1981). Final resolution of the radon issue awaits the outcome of the consolidated proceeding.

² We do so notwithstanding that Unit No. 2 has been out of service since its March 1979 accident and there is no prospect that it will return to operation in the near future. Given this circumstance, we assigned a very low priority to the rendition of this decision. For the reasons set forth in ALAB-570, 10 NRC 679 (1979), however, it was concluded that further exploration of the aircraft crash issue should not be deferred indefinitely to await a possible rehabilitation of Unit No. 2. Among those reasons was the factor that, although only Unit No. 2 is before us, that issue is equally applicable to the undamaged Unit No. 1. *Id.* at 684. The latter unit similarly has been shut down since the 1979 accident but its restart is now under active consideration.

CASE HISTORY

The Three Mile Island Nuclear Station lies 2.7 miles south-southeast of the southeast end of the single runway of the Harrisburg International Airport. See Figure 1, *infra*, p. 924. In circumstances where a facility is located at such close proximity to an airport, Commission guidelines require that an aircraft crash analysis be performed for the purpose of determining the extent to which aircraft hazards are to be incorporated into the plant's design.³

The applicants performed such an analysis with respect to Unit No. 2. On the basis of the results of that analysis, they concluded that the plant's vital structures should be designed to withstand the effects of a crash of a 200,000 pound aircraft. Underlying that conclusion were two principal factors: (1) the majority of the aircraft that use the Harrisburg Airport weigh less than 200,000 pounds; and (2) the probability of a heavier plane⁴ crashing into the unit was calculated to be less than 1×10^{-7} per year.⁵ As part of its review of the application, the staff also performed an aircraft crash analysis and agreed that the crash probability was less than 10^{-7} .⁶

At the hearing below on the application for an operating license for Unit No. 2, the intervenors challenged, *inter alia*, the validity of the probabilistic assessment. They contended that Boeing 747s and Lockheed C-5As, both heavy aircraft, frequently use the Harrisburg Airport but that they were not considered in making the calculations. They further asserted that the containment structure and other parts of the plant were inadequately designed to withstand the impact of a crash of such an airplane. Following the hearing, the Licensing Board concluded that the probability of a heavy aircraft crashing into Unit No. 2 was so low that, under applicable Commission guidelines, there was no need for the plant to be designed to withstand its effects. LBP-77-70, *supra*, 6 NRC at 1197-1200.

As earlier noted (p. 922, *supra*), the intervenors appealed from that decision, claiming that the probability analyses for heavy airplane crashes were not properly

³ At the time this proceeding was before the Licensing Board, the applicable guidelines relating to aircraft crash probability analyses were contained in the NRC staff's Standard Review Plan (NUREG-75/087), Section 3.5.1.6, and Regulatory Guide 1.70, Revision 2 (NUREG-75/094), Sections 2.2.2.5 and 3.5.1.6. The current guidelines are found in NUREG-0800, Revision 2, (July 1981) and Regulatory Guide 1.70, Revision 3 (November 1978).

⁴ In this opinion, we shall use the term "heavy aircraft" to refer to aircraft weighing in excess of 200,000 pounds. Such U.S. aircraft include the following models (and series thereof): Boeing 707, 720, 747 and 767; Douglas DC-8 and DC-10; Lockheed L-1011; Military C-5A, C-135, C-141 and E-4A; and Convair 990. Tr. 81; Read, *et al.*, fol. Tr. 242, at pp. 22-24 and Table 10.

⁵ Section 3.5.1.6 of the then-effective Standard Review Plan, NUREG-75/087, provides that if the probability of an airplane crash is shown to be less than "about" 1×10^{-7} per year (*i.e.*, less than 1 in 10,000,000 chances), such an event may be discounted even though its consequences might exceed those specified in 10 CFR Part 100. (Where a reference similar to 10^{-7} appears in this decision, it denotes $1 \times$ that particular number — *e.g.*, 10^{-8} represents 1 chance in 100,000,000.) For a more detailed discussion of the requirement for an airplane crash analysis, see our earlier decision on this matter in ALAB-486, *supra*, 8 NRC at 25-27.

⁶ Although not in issue here, the applicants' design basis crash assumes an impact with the unit at a speed of 200 knots. This figure was selected because it represents the maximum speed at which aircraft generally approach or depart from airports. ALAB-486, *supra*, 8 NRC at 27. See also fn. 31, *infra*.

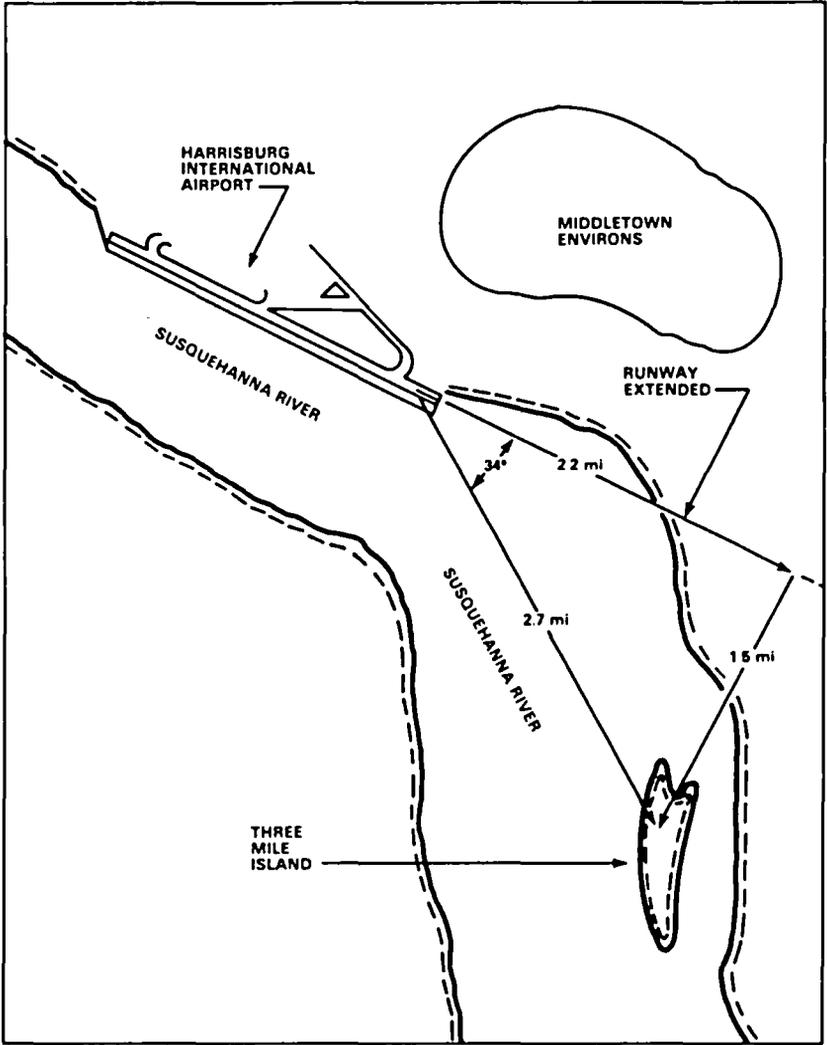


FIGURE 1. Relationship of TMI-2 and Harrisburg International Airport
 Adapted from Vallance, fol. Tr. 21, at Fig. 5

performed. They challenged both the adequacy of the data utilized by the applicants and the staff in their calculations (noting in particular the absence of crash data for either non-scheduled aircraft or military aircraft of the type (C-5A) that use the airport) and the methodology employed by those parties. See ALAB-486, *supra*, 8 NRC at 28.⁷ Upon a detailed examination of the evidence, we concluded that the record was sufficiently marred by “inadequacies, inconsistencies, and ambiguities” that reopening of the record to receive additional evidence was required. *Id.* at 43.⁸ Because, however, the probability of a crash of a heavy airplane into Unit No. 2 appeared to be sufficiently low as not to present an undue risk to the public health and safety, we determined that the unit’s operating license could remain in effect pending the additional inquiry.⁹

For reasons that need not be repeated here, we decided to hear the additional evidence ourselves. See *id.* at 44. To expedite the record’s development, we provided the parties with a detailed description of the matters that that evidence should encompass. *Id.* at 44-46.¹⁰ Subsequently, the Commission expanded the scope of the data and analyses that should be considered at the hearing. CLI-78-19, 8 NRC 295, 296-97 (1978).¹¹

The reopened hearing was held on December 11 and 12, 1978. Subsequent to its conclusion, on December 27, 1978, the intervenors moved for leave to present still further evidence to establish that planes fly directly over the TMI site while on their approach to the Harrisburg Airport.

⁷ We there described intervenors’ complaint more particularly as follows:

[T]he issue before us boils down to whether it can be said on this record that the probability analyses for heavy airplane crashes were properly performed. The intervenors have advanced a two-pronged attack on these analyses. First, they challenge portions of the data bases for the probability models (especially the applicants’), noting in particular the absence of crash data for unscheduled aircraft or for military aircraft of the type (C-5A) which uses the airport. Second, they question whether the models themselves can yield meaningful predictions of crash probability, absent an assessment of the error that might be associated with such predictions.

8 NRC at 28.

⁸ Our concerns with the record below were as follows:

2. We have seen that the record contains two sets of basic data, collected for different time periods and with different selection criteria. These basic data have been treated in different ways to obtain spatially dependent crash rates. As a result, we are presented with a wide spectrum of values for the probability of a heavy aircraft crash at the TMI-2 facility. The applicants have presented two probabilities which differ by a factor of 30, and the results reached by our use of the Standard Review Plan model and the applicants’ use of their primary model differ by a factor of 16. In each case, the crash probability for the current level of large aircraft traffic at Harrisburg airport is within the guideline value of 10^{-7} per year, but the amount of additional traffic that can be tolerated before this limit is reached varies greatly depending upon which data and which calculational model are used.

No attempt was made below by any of the parties or the Board to determine the best data base or the most reasonable methodology.

8 NRC at 42.

⁹ Board member Sharfman, who has since resigned from the Appeal Panel, dissented from this aspect of the decision. See 8 NRC at 49-68.

¹⁰ This is reproduced as Appendix A, *infra*, pp. 948-50.

¹¹ The intervenors had sought Commission review of ALAB-486. The Commission denied the request, but took the occasion to specify the additional matters that the parties should address. See Appendix B to this decision, *infra*, pp. 950-51.

In a February 1, 1979 memorandum and order, we decided that further exploration of the question of aircraft overflights of the TMI site was justified and that another hearing should be held for this purpose. ALAB-525, 9 NRC 111, 113-14. We scheduled that hearing to commence on April 4, 1979. On March 28, however, the accident involving Unit No. 2 occurred. As a result, the hearing was postponed indefinitely. In ALAB-570, 10 NRC 679 (1979), we rescheduled it for February 25, 1980 and it was held on that date.

HEAVY AIRCRAFT CRASH PROBABILITY

At the outset, it bears emphasis that the issue before us on appeal is a narrow one. As observed in ALAB-486, there is no dispute over the capability of the facility to withstand the "design basis crash"; *i.e.*, the impact of an aircraft weighing 200,000 pounds striking the plant at a speed of 200 knots. Nor is there disagreement that the determination whether a plant need be designed to withstand the crash of a heavy aircraft may properly turn on the probability of occurrence of such a crash. Rather, to repeat what was said in ALAB-486, the only issue is whether the probability analyses conducted by the Staff and applicants for heavy airplane crashes (showing a crash probability of less than the "about 10^{-7} " specified in the Standard Review Plan)¹² were based on adequate data and properly performed. 8 NRC at 27-28.

Before turning to the specific analytical techniques and data employed by the applicants and staff in making their crash probability calculations, it should be noted that both parties made use (with certain variations) of the following basic mathematical equation (discussed in ALAB-486, 8 NRC at 28-33):¹³

$$P_A = NAC$$

For present purposes, the terms of the equation may be defined as follows:

- P_A = the probability per year that a plane weighing more than 200,000 pounds (heavy aircraft) will crash into the plant (the single TMI-2 unit); in units of *crashes per year*.
- N = the number of heavy aircraft operations¹⁴ per year at the Harrisburg Airport that might affect the plant — *i.e.*, those occurring at the TMI end of the runway; in units of *operations per year*.
- A = the effective area of the facility — *i.e.*, the area that the plant, as a target, presents to an oncoming aircraft; in units of *square miles*.

¹² See fn. 5, *supra*.

¹³ See, for example, the testimony of staff witness Darrell G. Eisenhut, following Tr. 469, at pp. 4-6, and the testimony of applicants' witness John M. Vallance, following Tr. 21, at pp. 10-12.

¹⁴ An aircraft operation is either a landing or takeoff. 8 NRC at 30.

C = the areal crash probability — *i.e.*, the probability that a heavy aircraft engaged in a landing or takeoff operation will crash at a designated position with respect to the runway (*e.g.*, the TMI-2 site); in units of *crash per square mile per operation*.

A. General Methodology

In our earlier consideration of the matter, it became evident from the record then at hand that calculated crash rates might differ materially depending upon the criteria used for selecting the particular data on which the calculations were made. Because of the crucial importance of the data selected in determining the values to be assigned to the terms of the basic equation and the techniques used in performing the individual calculations, we instructed the parties (1) to develop a crash data base¹⁵ using events involving United States aircraft at airports throughout the United States pertinent to the TMI-2 site; and (2) from those data, to formulate an analytical model to compute the probability of a crash at a site off the end of a runway. See Appendix A, *infra*, pp. 948-50. Our instructions further stressed that, because the chosen data necessarily would be gathered from airports throughout the country, any particular characteristics of the Harrisburg Airport should be taken into consideration so as to insure that the calculations based on the model would provide a meaningful indication of the likelihood of a crash at TMI-2.

Pursuant to these instructions, both the applicants and the staff gathered data on aircraft crashes in the United States and classified them according to the nature of the operation involved: scheduled landings, scheduled takeoffs, non-scheduled landings and non-scheduled takeoffs.¹⁶ Vallance, fol. Tr. 646, at p. 1; Read, *et al.*, fol. Tr. 242, at p. 21, Table 4 Revised, and Table 8. They then made separate calculations of crash probability for each of those classifications and combined the results to arrive at the overall probability of a heavy aircraft crash into the TMI-2 facility.

As will be seen, the analyses reveal that scheduled aircraft crash rates are considerably lower than those for non-scheduled flights. The separate probability calculations for each type of operation allows the differences in the crash rates to be taken into account, and results in a more accurate and descriptive representation of the total crash probability.

¹⁵ The parties were, of course, to identify the selection criteria and the reasons for their adoption. See Appendix A, *infra*, p. 948.

¹⁶ "Scheduled" refers to a scheduled operation by a "Certified Route Air Carrier" (CRAC); an "air carrier" is an airline company licensed to engage in revenue producing operations. "Non-scheduled" refers to (1) CRAC operations that are not regularly scheduled (such as charter flights); and (2) non-CRAC operations (such as those conducted by supplemental carriers and the military).

B. Number of Aircraft Operations (N) and Target Area (A)

Two of the factors entering into the crash probability equation, the number of heavy aircraft operations at the Harrisburg Airport (N) and the target area presented by the plant (A), are straightforward in concept and were not the subjects of serious controversy. We deal with each of them in this section.

1. Number of Aircraft Operations (N)

The aircraft operation relevant to the computation of crash probability at TMI-2 is a landing or takeoff at the TMI end of the Harrisburg Airport. The number of aircraft landings and takeoffs at an airport can be assumed to be the same. This equality in the number of landings and takeoffs does not necessarily hold true, however, for either every runway of a multi-runway airport or a particular end of a specific runway. At the Harrisburg Airport, for example, the number of landings and takeoffs at the *TMI end of its single runway* (which extends in a northwesterly-southeasterly direction) are not the same. Wright, fol. Tr. 199, at pp. 3-4. Planes customarily land and take off into the wind. The prevailing winds at Harrisburg are from the west-northwest (Tr. 326). As a result, 65 percent of the landings, but only 35 percent of the takeoffs, take place at the airport's southeast (TMI) end. Eisenhut, fol. Tr. 469, at pp. 11-12.

Aircraft traffic at airports is recorded in a variety of ways by the Federal Aviation Administration (FAA) and the Civil Aeronautics Board (CAB). Read, *et al.*, fol. Tr. 242, at pp. 25-28. From the "Airport Activity Statistics of Certified Route Air Carriers" published by the latter agency, the staff ascertained the number of heavy aircraft operations at Harrisburg, scheduled and non-scheduled, by two domestic certified route air carriers (CRAC) for the years 1973-1977. *Id.* at pp. 25-26 and Tables 12-16. It then computed the number of charter operations by other carriers from an examination of CAB computer tapes. *Id.* at p. 26 and Tables 17-19.¹⁷ To these operations, the staff added an estimate of the number of private charter and non-revenue operations by other domestic carriers,¹⁸ as well as the figure supplied by the Military Airlift Command for heavy military aircraft operations.

On the basis of all of this information, the staff determined the total number of relevant operations for each of the years involved. More specifically, there were

¹⁷ Although the CAB computer tapes for 1976-1977 were faulty, with the help of National Archives personnel the staff ultimately succeeded in recovering the data from them. Read affidavit dated February 4, 1980, fol. Tr. 641, at p. 1 and Tables 19A, 19B.

¹⁸ The private charter operations were those of a local travel club. The number of operations involving its one DC-8 aircraft was estimated from the record of its fuel purchases. Air carrier non-revenue operations consist essentially of training operations. Their number was estimated by airport tower personnel. See Read, *et al.*, fol. Tr. 242, at pp. 27-28 and Table 20.

1,484 heavy aircraft operations at the Harrisburg Airport in 1973.¹⁹ The number of operations decreased the next two years to 1,010 and 634, respectively. In 1976, the number was 680.²⁰ It decreased to 630 in 1977. Read, *et al.*, fol. Tr. 242, at pp. 25-28 and Table 20; Read affidavit dated February 4, 1980, fol. Tr. 641, at Table 20 Revised.

For their part, the applicants made a count of the 1974-1976 Harrisburg operations involving heavy aircraft by examining the "flight strips" (computer data slips that show a flight plan has been filed with the FAA) for those years.²¹ This count produced the following numerical totals: 1270, 1458 and 1025. Read, *et al.*, fol. Tr. 242, at p. 27. For 1977, the applicants obtained from the airport manager an estimate of 1043. *Ibid.*; Tr. 26-27; 34-35. Applicants' witness Vallance expressed the opinion that it was "quite likely" that the estimate was "on the high side" (Tr. 34-35).²²

Although the staff's and the applicants' numbers on heavy aircraft operations at the Harrisburg Airport thus do not closely correspond, we do not find the differences unacceptable. The numbers were not derived from direct counts of heavy aircraft operations at Harrisburg, but rather had to be constructed in substantial part from various records which did not always indicate the size of the plane involved.²³ In such cases, the "count" relied on assumptions or estimates that may not have been precisely accurate. In any event, as will be seen later, the applicants will be required prior to resumption of Unit 2 operation to update their probability calculations to reflect current levels of aircraft traffic (see pp. 947-48, *infra*). Accordingly, there is no present necessity to determine whether the staff's or the applicants' data for operations at Harrisburg were the more accurate.

What both parties in fact did in calculating a value for N was to use the staff's data. As described by a staff witness, it was assumed that 600 heavy aircraft

¹⁹ The number of military aircraft operations included in this figure was estimated on the basis of the subsequent years' military aircraft operations at Harrisburg. *Id.* at p. 28 and Table 20.

²⁰ This figure and the following one for 1977 were slightly lower in the staff's earlier presentation on the basis of estimates of heavy aircraft charter operations included in the figures. The staff was able later to recover the 1976 and 1977 charter information from the defective tapes for those years (see fn. 17, *supra*), and corrected the earlier estimates. Read affidavit dated February 4, 1980, fol. Tr. 641, at 1 and Table 20 Revised.

²¹ The technical specifications pertaining to the TMI-2 operating license required the applicants to make periodic counts of heavy aircraft operations at the Harrisburg Airport.

²² During the course of his oral testimony, staff witness Jacques B. J. Read was asked to explain the discrepancy of about 400 operations between the staff's determination of the number of heavy aircraft operations at the Harrisburg Airport for 1977 (*i.e.*, 630), and the applicants' higher figure (Tr. 312-13). He was unable to do so, admitting the lack of an adequate explanation (Tr. 314-15). According to the witness, he made an attempt to "track down the 400 missing airplanes" by checking the applicants' reported number of heavy aircraft operations at the Harrisburg Airport with the FAA, CAB, the military and other offices that might have information concerning such operations; but was not able "to get that large an estimate" (Tr. 338).

²³ For example, the CAB charter records examined by the staff identified the airline but apparently not the type of the airplane involved. In examining such a record of a charter operation out of the Harrisburg Airport, the staff assumed that a heavy aircraft was involved if the airline (such as American Airlines) owned and operated heavy aircraft even though it also owned and operated other type aircraft. Read, *et al.*, fol. Tr. 242, at p. 26.

operations would take place at Harrisburg annually, divided equally between landings and takeoffs. Eisenhut, fol. Tr. 469, at pp. 11, 14-15. See also Tr. 463-64. Given the prevailing airport wind conditions, it was further assumed that 65 percent of the landings and 35 percent of the takeoffs would be at the TMI end of the runway; in other words, 195 landings and 105 takeoffs. Eisenhut, fol. Tr. 469, at pp. 11-13. Because 40 percent of the heavy aircraft operations at the airport are scheduled and 60 percent are non-scheduled (including training and military), the following figures were obtained with regard to the number of landings and takeoffs at the TMI end of the airport for each type of operation (*id.* at p. 13; Tr. 460):

	Scheduled	Non-Scheduled ²⁴
Landings	78	118
Takeoffs	42	64

The staff used these values (as representing N in the equation) for its probability analysis (Tr. 460, 463-64).²⁵

2. Plant Target Area (A)

The second parameter in the probability equation, the effective area, establishes the target a plane must hit in order to damage the facility. At the hearing below, the applicants initially calculated that area for the entire TMI facility, comprised of both Units 1 and 2. They determined that area to be 0.0225 square miles for landings and 0.0066 square miles for takeoffs. Vallance, fol. Tr. 646; at pp. 5-6.²⁶

²⁴ The staff's figures for non-scheduled operations contain an obvious calculational error. Sixty percent of the 195 landings is 117 (not 118). By the same token, 60 percent of the 105 takeoffs is 63 (not 64). Because of these errors, the number of operations at the TMI end of the runway reflected in this table totals 302, rather than the correct figure of 300 (195 landings and 105 takeoffs). The discrepancy is not sufficiently great to be of concern.

²⁵ The applicants ultimately adopted the same values for N in their calculations. Vallance, fol. Tr. 646, at p. 5 and Table 4.

²⁶ The applicants had described the method used to determine the effective area for the two-unit station as follows:

The "target area" for arrival (landing) accidents was assumed to be approximately the horizontal area (on the ground) which would be covered by the station plus the shadow cast by the largest vertical cross-section of the station (excluding cooling towers) assuming light rays emanate from the plane as it approaches the plant along a line inclined 10° above the horizontal. This angle was chosen as being a typical descent line for airplanes crashing on landing. (If the angle were greater, the area would be less and the probability of a strike would be less.) The area of shadow so obtained was increased by 50 percent to account for airplanes which might crash in front of the station and slide into it. The resulting target area for arrival accidents [landings] * * * is about 0.0225 square miles.

The "target area" for departure (takeoffs) accidents was similarly estimated using a 45° approach angle believed typical of departure crashes. This area * * * was estimated to be 0.0066 square miles.

ALAB-486, *supra*, 8 NRC at 32 (footnote omitted).

For operations at the TMI end of the airport, the applicants weighted those figures by the relative number of landings and takeoffs at that end and arrived at an area of 0.018 square miles. As a conservative measure, they rounded the figure upward to 0.02 and then divided it by two to obtain a target area of 0.01 square miles per reactor unit. ALAB-486, *supra*, 8 NRC at 32. The staff also used 0.01 square miles in its initial probability analysis. *Id.* at 32 fn. 46. The intervenors did not challenge the adequacy of the method used by the applicants to ascertain the target area presented by Unit No. 2 and we found it to be reasonable. *Id.* at 32-33.

In the reopened proceeding, however, both the applicants and staff departed from their use of the 0.01 square miles figure.²⁷ The applicants employed instead a target area of 0.0112 square miles for landings and of 0.0033 square miles for takeoffs. They obtained these figures by taking the values they had earlier assigned to the target area for landings and takeoffs for the entire facility (see fn. 26, *supra*) and then dividing them by two to arrive at the values for Unit No. 2 alone. Vallance, fol. Tr. 646, at pp. 5-6 and Table 5.

On the other hand, the staff recalculated the target areas to be 0.0062 square miles for landings and 0.0026 square miles for takeoffs. In arriving at these smaller target areas, it took into account, *inter alia*, the shielding effect of the facility's cooling towers and of some of the structures of Unit No. 1. Eisenhut, fol. Tr. 469, at p. 14 and Appendix A.²⁸

C. Areal Crash Probability (C) and Crash Probability into TMI-2 (P_A)

The remaining factor in the probability analysis is the areal crash probability (C)²⁹ at the TMI-2 site, expressed in units of crash per square mile per operation. To determine the value for this factor, it is necessary to ascertain the product of (1) the aircraft crash rate (R); and (2) the spatial distribution (*i.e.*, areal density) of the crashes (D (r, θ)).³⁰

²⁷ The applicants did so when they changed their method for calculating the aircraft crash probability from a single composite computation (which considered all operations, landings and takeoffs, together) to a combination of the results of four separate calculations (scheduled landings, scheduled takeoffs, non-scheduled landings, non-scheduled takeoffs). See p. 927, *supra*.

²⁸ We had asked that the parties assess any effect the cooling towers may have had on the crash probability values. See Items 6 and 10 of Appendix A, *infra*, pp. 949, 950.

²⁹ The staff uses the term areal crash density for areal crash probability. The two terms are synonymous.

³⁰ More specifically, the parameter C is broken down into the product of R, the probability per operation that there would be a crash within five miles of the end of the runway, and D (r, θ), a term which represents the probability that, given a crash, it would occur at a particular point off the end of the runway. Such a point is specified by the coordinates r, the distance from the end of the runway, and θ , the angular bearing of the event relative to the runway extended (*e.g.*, for TMI, r = 2.7 miles, θ = 34 degrees, see Figure 1, *supra*, p. 924). The areal density (D (r, θ)) was further separated into radial and angular components. See Moore and Abramson, fol. Tr. 378, at pp. 1-2; Vallance, fol. Tr. 21, at p. 12.

Analyses of the aircraft crash rate and spatial distribution of the crashes were made by both the applicants and the staff. Each, however, used somewhat different techniques. Before considering the analyses performed by the parties, we first discuss the aircraft crash data that were used to arrive at values for R and D (r, θ).

1. Aircraft Crash Data Base

The crash data consist of all known accidents involving United States air carriers, scheduled and non-scheduled, during the years 1956 to 1977.³¹

By applying certain selection criteria, the parties eliminated those accidents considered to be of no present relevance and each adopted a data base consisting of ninety-seven crashes for the 1956-1977 period.³² In the calculation of crash rates, the staff excluded from its data base the forty-two on-runway crashes as well as four off-runway accidents which had occurred during training operations.³³ On the

³¹ The data were obtained from reports such as "Annual Reviews of Aircraft Accident Data, U.S. Air Carrier Operations" by the National Transportation Safety Board (NTSB) and similar reports by the Federal Aviation Administration (FAA), the Civil Aeronautics Board (CAB) and the NTSB accident files. Vallance, fol. Tr. 21, at pp. 2-6 and Table 1; Read, *et al.*, fol. Tr. 242, at pp. 2-3 and Table 1.

At our request (see Appendix A, *infra*, p. 948), evidence on the speed of aircraft at the time of crash was also produced. Of the ninety-seven aircraft crashes included in the data base, the applicants could ascertain the speed with respect to only sixty-eight of them. Their mean speed at time of impact was 126 knots. Two of the sixty-eight had impact speeds in excess of 180 knots — one between 190-199 knots, the other between 200-209 knots. The record does not show which, if any, of these crashes involved heavy aircraft. Vallance, fol. Tr. 21, at Table 17.

Neither the applicants nor the staff conducted an analysis to determine the combination of aircraft weight greater than 200,000 pounds and crash speed less than 200 knots which would result in an impact equivalent to that caused by the crash of a 200,000 pound airplane at a speed of 200 knots. See Appendix B, *infra*, p. 951. Although the applicants stated that rough approximations can be made of the effects of such accidents (by assuming that these effects will be proportional to the kinetic energy of the aircraft at the point of impact), they did not believe that such an analysis would produce information which would be reliable in assessing the possible damage to the plant, because it would not take into consideration a number of factors that could affect the plant's response to such a crash. Vallance, fol. Tr. 21, at pp. 13, 31-32. The staff and the applicants both assumed that any crash by a heavy aircraft on the plant would result in unacceptable consequences. Tr. 490-91; see Vallance, fol. Tr. 21, at p. 13.

³² The criteria employed by the staff limited consideration to those crashes which (1) occurred within the contiguous United States; (2) involved destruction of the aircraft and/or an occupant fatality; and (3) occurred during a takeoff or landing operation (*i.e.*, at a point within five miles of the runway). Read, *et al.*, fol. Tr. 242, at pp. 16-21. The staff also excluded accidents involving nonfixed wing aircraft (*e.g.*, helicopters). See *id.* at Table 8 notes 1, 2. The applicants utilized very similar selection criteria with the result that ninety-five of the same crashes were included in both the staff's and applicants' data base (Tr. 45-49). As to the remaining crashes in each data base, the staff included a 1957 crash at Louisville, Kentucky, and a 1968 crash at Hanover, New Hampshire, neither of which was included in the applicants' data base; the applicants included a 1962 crash at Dallas, Texas, and a 1969 crash at Bradford, Pennsylvania, neither of which was included in the staff's data base. See Read *et al.*, fol. Tr. 242, at Table 4 Revised and Vallance, fol. Tr. 21, at Table 3 Revised.

³³ Read, *et al.*, fol. Tr. 242, at p. 18 and Table 8 note 3. The on-runway crashes were excluded because "these accidents do not contribute to the calculation of crash likelihood at a site away from the airport * * * ." *Id.* at p. 18. Off-runway crashes during training operations were eliminated because of the staff's inability to make a meaningful estimate of the number of such operations. *Id.* at Table 8 note 3.

other hand, the applicants considered both on-runway and off-runway accidents.³⁴ They did, however, exclude from their base of ninety-seven, eighteen crashes that occurred during training, ferry and test operations. Thus, seventy-nine of the ninety-seven crashes were factored into the applicants' crash rate calculations. See Vallance, fol. Tr. 646 at pp. 6-7 and Tables 7, 8. As previously noted, both parties calculated crash rates for landings and takeoffs for both scheduled and non-scheduled flights.

When the staff considered the spatial distribution of the crashes, it reinstated the four training operation crashes to obtain a total of fifty-five off-runway crashes. Read *et al.*, fol. Tr. 242, at Tables 9A, 9B. The applicants, however, utilized all ninety-seven crashes in their data base to determine the *radial* components of the areal density calculation; sixty-three data points were associated with landing accidents and thirty-four points with takeoff accidents. Vallance, fol. Tr. 646, at Figs. 2, 3. The *angular* components were obtained from data that excluded all crashes (fifty-three) that occurred on the runway as well as those at one-half mile or less from the end of the runway;³⁵ apparently the latter were not included because of the potential for large variations in the angular values for small deviations from the runway extended line. This left forty-four events of the ninety-seven crash data base to be considered in development of the angular components; thirty for analysis of landing accidents and fourteen for takeoff accidents. Vallance, fol. Tr. 646, at Figs. 4, 5. Neither party attempted to determine separate areal density values for scheduled and non-scheduled flights, due to the small data base.

We now turn to the staff's and applicants' analyses of the areal crash probability utilizing these data.

2. Staff's Analysis

As noted earlier (see p. 927, *supra*), the staff made separate probability calculations for each of four types of operations (scheduled takeoffs, scheduled landings, non-scheduled takeoffs and non-scheduled landings) and then combined the results to obtain the overall probability rate (P_A). Specifically, it combined the quantities for N and A (see pp. 926-27, *supra*) with the values for areal crash probability (C).

For each of the four types of operations, in order to obtain a value for C the staff first calculated the crash rate (R) and then the spatial crash distribution ($D(r, \theta)$). To determine R, the staff took the fifty-one non-training, off-runway crashes for the 22-year data period, segregated them according to the type of operations involved at the time of the crash and calculated the crash rates in each category by

³⁴ The non-applicable on-runway crashes were accounted for in the development of the areal density values.

³⁵ See Vallance, fol. Tr. 21, at p. 16.

dividing the number of crashes by the total number of operations in that category. The resulting 22-year average rates for each category are as follows:³⁶

	Scheduled			Non-Scheduled		
	Operations (Millions)	Hits ³⁷	Rate ($\times 10^{-6}$)	Operations (Millions)	Hits	Rate ($\times 10^{-6}$)
Takeoffs	86.3	11	0.13	2.36	2	0.85
Landings	86.3	25	0.29	2.36	13	5.51

We have seen that, to determine the spatial crash distributions, the staff took into consideration all fifty-five off-runway crashes in its data base. Average areal crash densities for landing or takeoff operations were computed for specific areas within the zero to five-mile, semicircular region at the end of a runway. To obtain the areal density for the area which would contain TMI, the staff first identified those crashes falling in an annular, semicircular region between 2.0 and 3.5 miles from the end of the runway.³⁸ The probability of a crash occurring in this region was determined by first dividing the number of crashes for each type of operation (takeoff or landing) that occurred between radii 2.0 and 3.5 miles by the number of off-runway crashes for that type of operation (fifteen for takeoffs, forty for landings). Similarly, the number of crashes during takeoff or landing that occurred within a sector of angular bearing between 25° and 40° from the line of the runway extended was divided by the same numbers of off-runway crashes (fifteen for takeoffs, forty for landings) to obtain the angular probability of a crash within this sector. The product of the resulting radial and angular probabilities — appropriately adjusted for dimensional correctness (expressed in terms of probability per mile and probability per radian respectively) and divided by the radius (2.7 miles) — was taken to represent the probability per square mile that, given a crash, it would occur within the region bounded by the 2.0 and 3.5 mile radii and by the 25° and 40° angular bearing.

A summary of the staff's probability calculations (*i.e.*, $P_A = NAC$) for each operations category and their total is presented in Table I, *infra*, p. 936. The final result of the staff calculations for the data through 1977 was a total annual crash probability of 3.2×10^{-8} at the TMI-2 site (Tr. 465). The staff, however, reduced

³⁶ Moore and Abramson, fol. Tr. 378, at Table I.

³⁷ As used in this table, "hits" refers to aircraft crashes.

³⁸ See Figure 2, *infra*, p. 935. The staff determined that the relevant area lies in the region within 2.0 and 3.5 miles from the TMI-end of the airport and 25° and 40° from the line of the runway extended. The TMI facility lies 2.7 miles from the nearest end of the runway (see Figure 1, *supra*, p. 924) at an angular bearing of 34°. Moore and Abramson, fol. Tr. 378, at pp. 3-8.

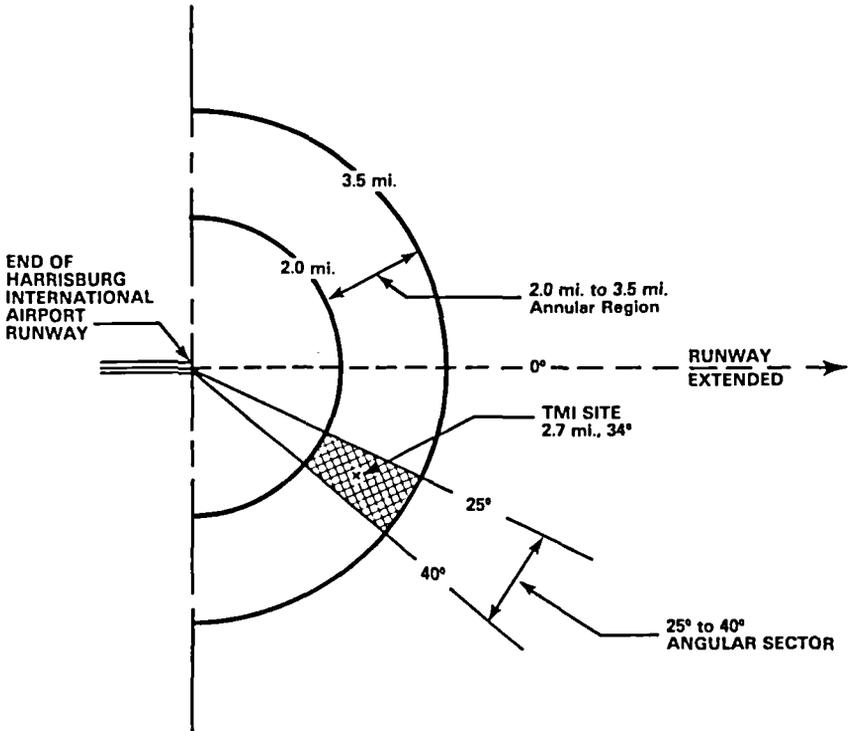


FIGURE 2. NRC Staff Depiction for Determination of Areal Density

TABLE I

Operation Category	Number of Operations N	Target Area (square mile) A	Crash Rate (crashes/ operation) R	Areal Density (hits/square mile) D	Hit* Frequency P
Scheduled Landings	78	0.0062	0.29×10^{-6}	0.00704	1.0×10^{-9}
Scheduled Takeoffs	42	0.0026	0.13×10^{-6}	0.0192	0.27×10^{-9}
Non-scheduled Landings	118	0.0062	5.51×10^{-6}	0.00704	28.5×10^{-9}
Non-scheduled Takeoffs	64	0.0026	0.85×10^{-6}	0.0192	2.7×10^{-9}
				Sum	32.5×10^{-9}
				Reduced by a factor of 2	1.6×10^{-8}

*This is the term used by the applicants to denote the probability of an aircraft crash into TMI-2. For convenience, we use that term here.

this value by a factor of two, to 1.6×10^{-8} per year (Tr. 467-68).³⁹ Mr. Eisenhut explained that heavy aircraft ordinarily fly closer to the line of the runway extended than do lighter planes, hence diminishing the chance of a heavy airplane crash at a site as far removed from the runway extension as TMI (1.5 miles) (Tr. 465-67). According to his "technical judgment," this difference in flight patterns warrants lowering the crash probability at TMI by at least a factor of two (Tr. 467).

3. *The Applicants' Analyses*

The applicants calculated the areal crash probability (C) through two separate methods, each of which differed from that employed by the Staff. Both of the applicants' techniques involved, in whole or in part, the application of the Bayes' theorem, a theory of probability developed more than 200 years ago.⁴⁰ In essence, the theorem makes use of existing knowledge to predict the probability of the occurrence of events in the future.⁴¹ It has particular utility where the number of known events is statistically small, *i.e.*, it avoids the necessity of gathering masses of data over long periods of time in order to make decisions based on probabilities.⁴²

As will be seen, the applicants' use of the Bayesian methodology has significance in this proceeding because inherent in the full employment of that technique is an assessment of the precision⁴³ of the prediction of the magnitude of the quantity. More specifically, when used in its pure form, the Bayesian method does not yield a single predicted value of the quantity of interest (*e.g.*, air crash rate in

³⁹ Prior to the February 1980 hearing, the staff updated its data base by including aircraft crash data for 1978. See Read affidavit dated February 4, 1980 and Moore and Abramson affidavit dated February 1, 1980, fol. Tr. 641. The staff's analysis on the basis of the updated data resulted in a total crash probability of 1.87×10^{-8} per year (Read affidavit, dated February 4, 1980, fol. Tr. 641, at p. 6), which the staff later claimed should have been 1.75×10^{-8} . Staff May 1, 1980 posthearing memorandum at p. 31 fn. 13. The difference between either value and the 1.6×10^{-8} value applicable to the 1956-1977 data is so slight as to be without significance. To permit easy comparison with the results of the applicants' analyses discussed below (see pp. 937-41, *infra*) (applicants' data base did not include 1978 crash information), we have confined our consideration of the staff's analysis to that related to the pre-1978 data.

⁴⁰ The theorem is attributed to the Reverend Thomas Bayes (1702-1761), a Presbyterian minister and mathematician. Levin and Rubin, *Applied Elementary Statistics* (1980), at p. 145.

⁴¹ The applicants' witness Stanley Kaplan explained the theorem this way: "The Bayesian theorem addresses the question of how one's state of knowledge changes when you get new information. It's a fundamental law of inductive reasoning, inferential reasoning. Given wherever you are, whatever you know, some new information comes down; how does that change your state of knowledge? That's what Bayes' theorem does" (Tr. 93). Dr. Kaplan also characterized the Bayesian extrapolation process as "in a way, analogous to a least square[s] fitting technique." Vallance, fol. Tr. 21, at A-3.

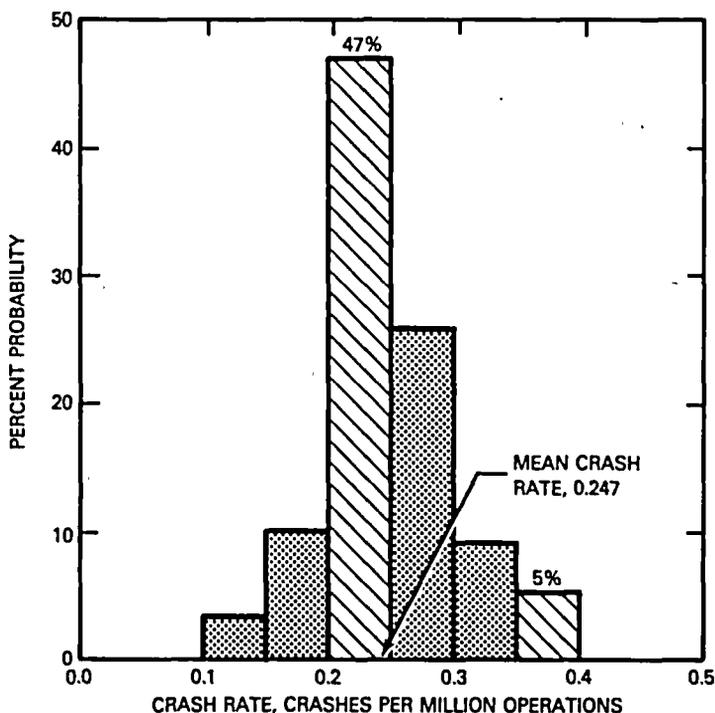
⁴² Levin and Rubin, fn. 40, *supra*, at p. 145.

⁴³ In the probability context, "precision" is used interchangeably with "uncertainty" and "statistical error." They refer to the degree of divergence or spread in possible values relating to the mean value of an estimated, or measured, quantity. A quantity that can be estimated with high precision would have a relatively small uncertainty or statistical error; on the other hand, a large uncertainty suggests a large error, and hence, relatively low precision.

1978); rather, the result is a probability distribution function which assigns a probability that the quantity in question will have a value within a certain range.⁴⁴

a. The applicants' first areal probability analysis employed "single valued" (or mean) estimates of the factors entering into the determination of C. Vallance, fol. Tr. 646, at pp. 6-7. The crash rate for each of the four types of operations was developed using Bayesian techniques to account for historical trends and to obtain mean values for 1978. The technique was applied to the number of relevant crashes in the data base for each type of operation: scheduled landings, 41; scheduled takeoffs, 19; non-scheduled landings, 12; and non-scheduled takeoffs, 7. See

⁴⁴ For example, applicants calculated an overall crash rate probability distribution function using the data obtained from 1956 through 1977. Vallance, fol. Tr. 21, at Appendix A. The bar graph below, derived from Figure A-1 of that Appendix, depicts for the year 1978 the probability that the crash rate would have values in a certain range. In part, this graph indicates that there is about a 47 percent chance that the overall crash rate is between 0.20 and 0.25 per million operations and that the probability is only about 5 percent that the rate would be as great as 0.35 to 0.40 per million operations. Applicants also have calculated, using this information, that the mean crash rate is 0.247 crashes per million operations. Vallance, fol. Tr. 21, at p. 24.



Vallance, fol. Tr. 646, at Tables 7, 8.⁴⁵ The results of these calculations were as follows:⁴⁶

Type of Operation	Crash Rate (R), Crashes per Million Landings or per Million Takeoffs
<i>Scheduled</i>	
Landings	0.30
Takeoffs	0.056
<i>Non-Scheduled</i>	
Landings	1.7
Takeoffs	3.1

To compute the values for the areal density factor ($D(r, \theta)$), the applicants formulated equations using the relevant data to describe the behavior of the radial and angular crash distributions mathematically. From these equations, the applicants obtained values for areal density at a point 2.7 miles from the Harrisburg Airport and 34° from the runway centerline extended (*i.e.*, at the TMI-2 site): $0.0020/\text{mile}^2$ for landings and $0.0054/\text{mile}^2$ for takeoffs. Vallance, fol. Tr. 646, at pp. 7-8 and Table 9. These values were combined with those previously obtained for crash rates (R) to obtain the quantities for C.

Having determined the individual values for the terms N, A and C in the probability formula $P_A = NAC$ (see pp. 926-27, *supra*), the applicants proceeded to compute the probability of a crash into Unit No. 2 for each of the four types of operations. As reflected in Table II, *infra*, p. 940, they then determined the overall probability of a crash into TMI-2 by adding the four products to obtain a final result of 8.5×10^{-9} .

b. In contrast, the applicants' second probability analysis used Bayesian techniques throughout. First, the applicants developed individual crash rate probability distributions for each of the four modes of operation (scheduled takeoffs and landings, non-scheduled takeoffs and landings). They also calculated distribution functions for the radial and angular components of the areal density. Vallance, fol. Tr. 646, at pp. 1-2, 8-9 and Appendix B. These three distribution functions were combined with the number of operations (N) and target areas (A) to obtain a hit frequency distribution function for each of the four modes of operation. The

⁴⁵ As noted earlier (pp. 926-27, *supra*), these consisted of all of the crashes in the data base except for those that occurred during training, ferry and test operations.

⁴⁶ Vallance, fol. Tr. 646, at p. 7.

TABLE II
Applicants' Single-Valued Calculation*

Operation Category	Number of Operations	Target Area (square mile)	Crash** Rate (crashes/operation)	Areal Density (hits/square mile)	Hit*** Frequency
Scheduled Landings	78	0.0112	0.30×10^{-6}	0.0020	0.5×10^{-9}
Scheduled Takeoffs	42	0.0033	0.056×10^{-6}	0.0054	0.04×10^{-9}
Non-scheduled Landings	118	0.0112	1.7×10^{-6}	0.0020	4.5×10^{-9}
Non-scheduled Takeoffs	64	0.0033	3.1×10^{-6}	0.0054	3.5×10^{-9}
				Sum	8.5×10^{-9}

*Vallance, fol. Tr. 646, at Table 1, p. 10.

**Applicants' crash rate values include crashes both on and off the runway. The fact that an on-runway crash cannot contribute to the ultimate hit frequency at an off-airport site (*i.e.* at TMI) is accounted for in the areal density factor. Vallance, fol. Tr. 649, at pp. 1 & 2.

***This is the term used by the applicants to denote the probability of an aircraft crash into TMI-2. We used the same term in Table 1, *supra*.

applicants took mean values of each of the four probability distributions, and added them to obtain a mean hit frequency of 6.6×10^{-9} /year at the TMI-2 site:⁴⁷

Hit Frequency, 10^{-9} Hits/Year	
Scheduled Operations	
Landings	0.5
Takeoffs	0.03
Non-Scheduled Operations	
Landings	4.0
Takeoffs	2.1
Total	6.6

In addition to the foregoing mean values, this Bayesian method provides a distribution which assigns a probability that the frequency of heavy aircraft crashes at TMI-2 will have a value within a certain range. As calculated by the applicants, there is a 0.9 (90 percent) probability that the hit frequency of aircraft crashes at TMI-2 will be less than 11×10^{-9} /year and a 0.1 (10 percent) probability that it will be less than 4×10^{-9} /year. *Id.* at p. 4. Thus, the 90 percent confidence limit is 11×10^{-9} per year, approximately a factor of two greater than the mean hit frequency.⁴⁸

D. Assessment of Staff's and Applicants' Analyses

1. Methodology

Turning to an assessment of the analytical methods employed by the staff and the applicants in determining the probability of a heavy aircraft crash into the TMI-2 facility, we have seen that each method produced an ultimate result which did not differ materially from those derived from the others. The staff's probability estimate of 1.6×10^{-8} (see p. 934, *supra*) does exceed by a factor of approximately two both the applicants' single-valued estimate of 0.85×10^{-8} (previously expressed as 8.5×10^{-9}) and the mean value of their probability distribution estimate of 0.66×10^{-8} (previously expressed as 6.6×10^{-9}). See pp. 939, 941, *supra*. But at these low probability levels, such differences are insignificant.

⁴⁷ Vallance, fol. Tr. 646, at pp. 3-4. See also *id.* at Table 2, Tables 3A-D.

⁴⁸ "Confidence limit" is a mathematical concept which embodies a statement of the precision or the uncertainty in an estimate. In general terms, the 90% upper confidence limit on a particular estimated quantity is that value of the estimate for which there is a 90 percent chance that it will *not* be exceeded by the "true" value. Using the example in the text, applicants estimated the mean value of the hit frequency at TMI to be 6.6×10^{-9} per year with a stated 90 percent confidence limit of 11×10^{-9} . In other words, there is a 90 percent chance that the "true" value will be less than 11×10^{-9} and, conversely, only a 10% chance that the "true" value will be greater than 11×10^{-9} .

Moreover, all three ultimate results fall well within the governing standard that the probability of a heavy aircraft crash into TMI-2 not exceed 10^{-7} .

Although we have found no basis for the outright rejection of any of the analyses presented to us, this is not to say that they all have equal merit. To the contrary, in our view the staff's methodology has certain infirmities that appear to make it less desirable in general application (particularly in comparison with the applicants' second analytic procedure).

To begin with, the manner in which the staff averaged crashes to obtain a spatial distribution was overly conservative. Specifically, the average of the crashes occurring between 2.0 and 3.5 miles from the end of the runway included those that occurred along the path of the runway extended, a relatively large number as compared to those closer to the TMI-2 site. See Read, *et al.*, fol. Tr. 242, at Fig. 1. Similarly, the average of the crashes which occurred within the 25° to 40° angular sector included crashes close to the end of the runway, a region which is also somewhat removed from the TMI-2 site. The distribution of crashes this close to the end of the runway does not reflect the pattern or density of crashes farther away. This averaging technique ignores the difference between the aircraft crash pattern near the TMI-2 site and those patterns obtaining either near the end of the runway or close to the runway centerline extended (See Tr. 385-86).

The methodology also suffers from the fact that its use to compute the crash probability in certain regions within the zero to five-mile radius from the end of the runway would yield a result of zero, which obviously is unrealistic. Although that result might be avoided by selecting a larger area (both radially and angularly) over which to average crash probability, to do so would unduly decrease the spatial resolution of the method. True, the staff suggested that this deficiency could be remedied by assuming "pseudo" crashes in areas in which application of the method would predict zero probability values. Moore and Abramson supplemental testimony of March 16, 1979, attached to their affidavit dated February 1, 1980, fol Tr. 641, at p. 4. But such a course of action strikes us as arbitrary at best.⁴⁹

Moreover, by taking the average of crashes occurring during the 22-year data base period, the staff's analysis failed to take into account an apparent historical trend toward a reduction in crash rate in more recent years.

Both of the applicants' analyses avoided these shortcomings. The data for the spatial distribution of crashes were used to develop expressions that gave reasonable values of the areal density throughout the region. The use of Bayesian

⁴⁹ The staff's averaging method also leads to a distribution function which for the angular correlation is irregular (see Tr. 383-85). This irregularity in crash probability as a function of the bearing is simply a reflection of statistical fluctuations in the relatively small data base. With a sufficiently large data base, the actual crash points would presumably produce an even angular distribution.

techniques took account of the historical trends in the crash data and thus produced crash rates that were seemingly more current than those obtained by the staff.⁵⁰

It should be added, however, that, as previously seen (see pp. 939-41, *supra*), the applicants' second analysis contains a useful feature not present in their "single-valued" analysis: an assessment of the precision of the probability estimates. Through a more extensive use of Bayesian techniques, the second analysis produced probability estimates that incorporated upper and lower bound confidence limits.⁵¹

One of the intervenors' exceptions to the Licensing Board's decision on the aircraft crash issue asserted that the estimated crash probabilities were meaningless without any statement of their uncertainty. While questioning the importance of such information, we did note that there was wide divergence between the various probability estimates originally presented by the parties (see fn. 8, *supra*; ALAB-486, *supra*, 8 NRC at 42-43) and, in our order calling for a further hearing, included a request that they attempt to assess the precision of revised probability estimates. See Appendix A, Item 3, and Appendix B, Item V, *infra*, pp. 949, 951.

In establishing "about 10^{-7} " per year as a sufficiently low crash probability,⁵² the Standard Review Plan makes no mention of the need to assess the uncertainty of the calculated probability. Nor do intervenors, who raised the uncertainty matter in this proceeding, offer any suggestions regarding how an assessment of the

⁵⁰ The applicants translated the trend toward lower crash rates during the period 1956-1977 into mathematical terms. Their projection, employing Bayesian methods, is reasonable for the period immediately following those years. But the validity of projections further in to the future (*e.g.*, to determine what the crash rate might be in 1982) using the same data, is questionable because of the significant impact that relatively small data fluctuations can have on the probability estimate. For this reason, more recent data should be factored into the calculations for estimates of crash probability for 1982 and future years.

⁵¹ There was no inherent error assessment feature built into the staff's method of predicting areal crash probability. First, the staff applied standard statistical techniques to determine upper confidence limits for each of the three factors used in the calculation for areal crash density. Moore and Abramson, fol. Tr. 378, Appendix. Then, to obtain a "conservative" upper confidence limit for the product of the three factors, it multiplied together the upper confidence limits of each of the three. *Id.* at pp. 5, 6; Tr. 710. This approach, known as the Bonferroni method, appeared to us to be excessively conservative — to the point of being unrealistic — and was the subject of considerable discussion in our memorandum prior to the February 1980 hearing. ALAB-525, *supra*, 9 NRC at 117-18.

At that hearing, the staff conceded the very conservative nature of its first calculation and provided modified upper confidence limit results. Moore and Abramson supplemental testimony of March 16, 1979, attached to their affidavit dated February 1, 1980, fol. Tr. 641, at pp. 7-13. The staff also developed a "lower bound" estimate for the 90 percent upper confidence limit for the areal crash density for each mode of operation. On the basis of its own calculations using the data of this record, this Board is inclined to accept the staff's "lower bound" 90 percent confidence limit estimates as reasonable. These "lower bound" 90 percent confidence limit estimates for the four modes of operation are greater by roughly a factor of three than the respective areal crash densities used to arrive at the crash probability of 1.6×10^{-9} /year.

⁵² See fn. 5, *supra*.

degree of precision of a particular calculated crash probability estimate might be factored into our decision respecting the acceptability of that estimate.⁵³

One fact is clear, however. For events the estimated probability of which is of the order of 10^{-7} per year, there is virtually no hope that there will ever be sufficient data available to obtain a precise measured value. As we have seen, this is the case with estimates of the likelihood of an aircraft crash at some location near the end of an airport runway. The staff determined lower bound 90 percent confidence limits that are about a factor of three greater than the estimated values of areal crash density (see fn. 51, *supra*). Applicants' values for the 90 percent confidence limit were about a factor of two greater than the estimated values (see p. 941, *supra*).

Because the estimate of any probability in the range of the acceptable value of 10^{-7} per year is by its very nature subject to a relatively large degree of uncertainty, the calculated uncertainty (*e.g.*, the 90 percent confidence limit) should be considered as only one of several means to judge the reasonableness of the estimate. If a properly calculated 90 percent confidence limit exceeds the estimated value by a large factor, it would call into question the validity of the estimate itself (*i.e.*, the data or methodology used to obtain it). In this case, we find that 90 percent confidence limits which exceed the estimated values by a factor of two or three are not excessive.

Another approach to judging the reasonableness of a probability estimate would be to compare several values calculated using different techniques. Again, the record of this proceeding provides the basis for such a comparison between the values of crash probability determined by the applicants and the staff. As we have seen (p. 941, *supra*), the final values determined by the two parties differ by about a factor of two, a difference which is not unreasonable in light of the calculated uncertainty in both cases.

2. *Military Aircraft*

On their appeal from the Licensing Board's decision, the intervenors did not seriously challenge the staff's and applicants' analytical procedures *per se*; rather, their criticism was directed largely to the adequacy of the data earlier relied on by the staff and applicants. One complaint was that, although military C-5As fly in and out of the Harrisburg Airport, sufficient data on the crash rate of such aircraft were absent from the record. See 8 NRC at 34-35. Subsequently, the staff and the applicants provided crash data not only for the C-5As but, as well, for other heavy military aircraft of the type (C-141s and E-4As) that use the Harrisburg Airport.

⁵³ Apart from several statements regarding material in the record related to error and the accuracy of data, the intervenors' April 30, 1980 post-hearing memorandum is totally silent on the matter of the uncertainty of crash probability estimates.

Vallance, fol. Tr. 21, at pp. 5-6 and Tables 8-10; Read, *et al.*, fol. Tr. 242, at pp. 18-20 and Tables 6, 7. Those data showed that, during the eleven-year period between 1968-1978, there were only four crashes of such aircraft worldwide during a total of 4.7 million takeoff and landing operations. See Vallance, fol. Tr. 21, at Tables 8-10; Read, *et al.*, fol. Tr. 242, at Tables 6,7. Three occurred during landing and one during takeoff; of those, only one landing crash occurred completely off-runway (in Vietnam). See Vallance, fol. Tr. 21, at pp. 5-6 and Tables 8,9; Read *et al.*, fol. Tr. 242, at pp. 19-20 and Table 7.

Given the relatively small number of military aircraft crashes and the number of operations associated with them, the crash rates derived therefrom may be of questionable value for probability analysis purposes. In any event, the military landing and takeoff crash rates are less than those employed by the staff and the applicants which utilized only civil aircraft crash data.⁵⁴ This being so, we find the decision not to factor a separate crash rate for military aircraft into their probability analyses to be reasonable. Both parties assumed military aircraft to have the same crash rate as non-scheduled civil flights.

3. *Takeoff and Landing Patterns*

Intervenors raise yet another objection concerning the application of the staff's and applicants' analytical procedures. They argue that the analyses were based on the "fundamental assumption," assertedly not supported by the facts, that planes at the Harrisburg Airport "do not intentionally approach takeoff and landing other than in the direction of a straight-line from the centerline of the runway." Intervenors' posthearing memorandum, at p. 7. They insist that the staff and the applicants "must start over again by assembling the basic raw data from which calculations can be properly made." *Id.* at p. 6.

The intervenors' argument is wide of the mark. To begin with, the applicants' probability calculations were not founded on the premise that planes taking off and landing at the Harrisburg Airport invariably follow the runway's centerline extended. To the contrary, the applicants made no assumptions in that respect; rather, their calculations were based on the historical record of crashes at or near airports throughout the contiguous United States without regard to any of the attendant circumstances (including landing and takeoff patterns).

For its part, the staff employed almost identical crash data. But, as previously seen (pp. 934-37, *supra*), it did reduce its ultimate crash probability estimate by a

⁵⁴ Under the staff's approach of calculating the crash rates taking into consideration only off-runway crashes in the contiguous United States, the heavy military aircraft crash rate for landings or takeoffs would be zero. Even under the applicants' approach of considering both on-runway and off-runway crashes in the contiguous United States, average crash rates for heavy military aircraft during landing operations (0.85×10^{-6}) and takeoff operations (0.43×10^{-6}) would be less than those for non-scheduled civil aircraft landings and takeoffs. See p. 939, *supra*.

factor of two on its assumption that, on takeoff or landing, heavy aircraft customarily remain closer to the centerline of the runway extended than do lighter planes (the utilized crash data were not restricted to heavy aircraft). The record bears out that this generalization obtains at Harrisburg, at least insofar as concerns the likelihood that a heavy aircraft might fly over the TMI site in the course of a landing or takeoff.

At the February 1980 hearing (see p. 926, *supra*), four senior commercial pilots appeared as staff witnesses.⁵⁵ These pilots, in the employ of three different airlines, had been selected because collectively they had considerable personal experience with regard to both scheduled and non-scheduled heavy aircraft operations at Harrisburg (Tr. 527-28). Their uniform testimony was that they do not fly over the TMI site either in landing at or taking off from that airport; indeed, they come no closer to the site than one to two miles. Questionnaires fol. Tr. 531, at question 18; Tr. 574-75. See also Tr. 543, 558, 569-71, 582, 584-85.⁵⁶

The intervenors point, however, to the testimony of their witness, Dr. Judith Johnsrud, to the effect that, on a DC-9 flight from Pittsburgh to Harrisburg in January 1980, she had passed directly over the TMI site (Tr. 607-08). But this evidence does not contradict the testimony of the pilots, for a DC-9 weighs a maximum of 110,000 pounds (*i.e.*, does not qualify as a heavy aircraft). Wright, fol. Tr. 199, at Table 2B.⁵⁷ And we have found nothing else in this record that might contradict the pilots' testimony to the effect that heavy aircraft using the Harrisburg airport do not customarily fly over the TMI site.

It need be added only that there is likewise nothing in the record to suggest that there are special conditions at Harrisburg that might make operations there more difficult than those at airports generally. To the contrary, all of the pilot witnesses described Harrisburg as not unique in terms of meteorology, geography, topography and electronic guidance equipment; and the flight patterns there were characterized as standard (Tr. 538, 541, 560, 562, 573, 584). Officials from the FAA's

⁵⁵ The witnesses were: Captains Edward Beuerlein and Clark Billie, both of Trans World Airlines, a major U.S. air carrier which conducts scheduled and non-scheduled operations at Harrisburg; System Chief Pilot Donald L. Ufford of Evergreen International Airlines, Inc., a small non-scheduled carrier serving Harrisburg; and Captain David Lithgow of Transamerica Airlines (formerly Transinternational Airlines), a larger non-scheduled carrier serving Harrisburg. Tr. 527-28; questionnaires fol. Tr. 531.

⁵⁶ Commercial flights routinely fly under Instrument Flight Rules (IFR) which would require, for a landing at the TMI end of the Harrisburg Airport runway, that the aircraft enter a final approach leg of the pattern along the runway extended some six to eight miles from the end of the runway (Tr. 263-64, 534-36, 577). However, a pilot may, upon request directed to the flight controller, receive permission to land under Visual Flight Rules (VFR) (Tr. 301-02, 577). In that case, the landing pattern is governed by the minimum altitudes that the pilot must observe before getting into the final approach leg of the landing (Tr. 536, 543, 569, 582, 586). One pilot, Captain Lithgow, pointed out that his company (which flies only non-scheduled operations) recommended that all landings be performed under IFR conditions (Tr. 580-81).

⁵⁷ Two of the pilot witnesses speculated that U.S. Air, the airline on which Dr. Johnsrud said she flew over TMI, might have flight pattern procedures that would permit such a flight. Captain Ufford noted that U.S. Air does not fly heavy aircraft (Tr. 633-35).

Harrisburg Airport District Office also testified to the same effect. See Read, *et al.*, fol. Tr. 242, at pp. 36-42.

CONCLUSION

For the foregoing reasons, we are satisfied that the various probability analyses performed by the staff and the applicants produced acceptable results based upon the data then at hand. But those data — acquired several years ago — may not have continuing validity. More particularly, it is possible that there has been in the interim (or will be in the future) a substantial change in, *e.g.*, the number of heavy aircraft operations at Harrisburg or the nationwide aircraft crash rate. Such a change might materially affect the probability estimates contained in this record.

Stated otherwise, it is not enough to find (as we do) that the evidence before us sufficiently establishes that, as of 1977, the annual probability of a heavy airplane crash into the TMI-2 site was less than the 10^{-7} guide line set out in the Standard Review Plan.⁵⁸ There remains the matter of what mechanism should be employed to insure that any significant changes in crash rates or number of Harrisburg operations are taken into account in determining whether the 10^{-7} guideline continues to be satisfied.

As of this writing, of course, TMI-2 remains disabled and when it might return to service is not currently ascertainable. See fn. 2, *supra*. Nonetheless, the technical specifications associated with that unit's operating license require the applicants to provide an annual report of aircraft operations at Harrisburg for the preceding twelve-month period. We modify that requirement, as recommended by the staff,⁵⁹ to call for a breakdown of the number of aircraft operations into scheduled and non-scheduled takeoffs and landings. This is being required because the ultimate crash probability values have been seen to be sensitive to the number of operations in each operations category.

We add a further requirement. Should the unit return to service, the applicants are to update their analysis of the crash probability prior to its operation and then do

⁵⁸ As we have seen, the highest calculated annual probability of a crash at the TMI-2 site of a heavy aircraft landing at or departing from the nearby Harrisburg Airport is approximately 1.6×10^{-8} . This value was obtained by the staff and was about twice the values determined by the applicants (0.85×10^{-8} and 0.66×10^{-8}).

As noted earlier (pp. 929-30, *supra*), the 1.6×10^{-8} probability value was calculated by the Staff on the basis of its estimate of 600 landings and takeoffs at Harrisburg for the year 1977. Even if it had employed the applicants' estimate of 1043 such operations for that year (utilizing the same ratio between landings and takeoffs, and scheduled and non-scheduled operations as with the 600), the result would have increased only to about 2.8×10^{-8} , a value still well within the 10^{-7} guideline.

⁵⁹ Staff posthearing memorandum, fn. 39, *supra*, at pp. 33-34.

so at least once every three years, utilizing current Harrisburg Airport traffic figures as well as updated areal crash density values.⁶⁰

If such an analysis should indicate that the crash probability value does not meet the 10^{-7} per year guideline — or should suggest the likelihood that the probability value will be exceeded in the near future (*e.g.*, by a large jump in the amount of non-scheduled operations at the Harrisburg Airport) — the applicants shall undertake further protective measures. What might be considered are measures such as those which the Staff proposed at the hearing below and to which we referred in ALAB-486. 8 NRC at 27 fn. 35.⁶¹

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the
Appeal Board

APPENDIX A

1. Instructions to the parties supplied by this Board in ALAB-486, 8 NRC 9, 44-46 (1978):

- (1) There shall be provided a complete set of those data on aircraft crashes in the vicinity of airports in the United States which would be pertinent to the calculation of the probability of a crash of a heavy aircraft at the TMI-2 site. This compilation should cover the time period from the mid-1950's to the present. There should be an identification of the selection criteria used (*e.g.*, fatal vs. destructive crashes), together with a justification for the choices made. In furnishing this evidence, the parties shall observe the following directions:

⁶⁰ We believe that the applicants' technique of determining areal crash probabilities is the most reasonable and accurate means (of those presented in this proceeding) for carrying out these periodic updates.

⁶¹ To repeat an earlier observation (fn. 2, *supra*), although our jurisdiction in this proceeding is confined to Unit No. 2, the issue here (and thus the conclusions we have reached) have equal applicability to Unit No. 1. For this reason, the staff may wish to consider whether the requirements we have imposed with regard to any future Unit No. 2 operation should also be imposed in connection with a resumption of Unit No. 1 operation.

- (a) The data should include the spatial distribution of crashes in the vicinity of runways, either graphically, similar to Figure 2. 2-2 of the TMI-2 FSAR, or by listing appropriate crash coordinates.
 - (b) The data should be grouped in appropriate time periods, so that any time-dependent trends in rate or spatial distribution will be identifiable.
 - (c) The basic data set would presumably be for United States common carrier aircraft. However, to the extent possible, any differentiations which can be made along the following lines should be provided:
 - (i) Aircraft greater than 200,000 pounds vs. aircraft less than 200,000 pounds.
 - (ii) Aircraft speed at time of impact.
 - (iii) Scheduled vs. nonscheduled flights.
 - (d) Separate crash data for military C-5A's near airports should be provided.
- (2) If there are trends evident in the data obtained above (*e.g.*, crash rate different for heavy planes or in more recent years), these shall be addressed and, if possible, explained in the testimony.
- (3) The data compilation shall be used to develop a model to compute the probability of a crash per operation and per unit area, at a site off the end of a runway. The model should reasonably reflect the spatial distribution of crashes displayed by the data and incorporate conservatively any trends for the future which these data portend. An attempt should be made to assess the precision that might be expected for probability values determined using the model.
- (4) Since the compilation will be based on crash data obtained for many airports, the Harrisburg International Airport should be considered in terms of its particular degree of hazard relative to other airports in the selected data base. The testimony should address, among other things, such factors as topography, magnitude of traffic, meteorological conditions, and the availability of electronic guidance equipment at the airport.
- (5) The testimony should identify, preferably on a large-scale map upon which the TMI site and the Harrisburg airport are accurately depicted, the routine takeoff and landing flight patterns that heavy aircraft would use. Typical airspeeds at various points in the patterns should be indicated.
- (6) The testimony should address the extent to which the cooling towers at the TMI site might influence flight patterns at the Harrisburg airport. There should be an assessment of the effect that the towers might have on computed crash rate values.

- (7) The testimony should disclose the number of aircraft of weight greater than 200,000 pounds which have used the Harrisburg airport during each of the last 8 years. This traffic should be broken down, if possible, by aircraft type, scheduled or nonscheduled, and military or commercial. If possible, a breakdown of the operations according to the end of the runway at which they took place should be provided.
- (8) Projections of the future heavy aircraft traffic at the Harrisburg airport should be made on the basis of the information developed in connection with item (7) above, as well as any additional reliable information.
- (9) Using the model developed in response to item (3) above and a range of levels of heavy aircraft traffic consistent with the projections developed in connection with item (8) above, the testimony should address the probability per year of a crash of an aircraft at TMI-2, including an estimate of the precision of the assessment.
- (10) Finally, the testimony should consider how the generic probabilities thus arrived at might be affected by those unique features of the Harrisburg airport-TMI site relationship which might not be expressly reflected in the computational model (*e.g.*, the relative hazard of that airport, the effect of the cooling towers, etc.). This assessment should be cast in quantitative terms to the extent possible.

APPENDIX B

Instructions to the parties supplied by the Commission in CLI-78-19, 8 NRC 295, 296-97 (1978):

- I. **CRASH DATA.** Crash data for operations in the U.S. during the last 5 years should be obtained by year and type of aircraft, for those over 200,000 pounds, segregated according to whether military, scheduled, or nonscheduled. Data should include, for each crash: cause, location, type of ground control equipment in use (*e.g.*, whether an instrument landing system was present), weather conditions, speed at impact, and type of operation (takeoff, landing, touch-and-go). Sources of this information might include the National Transportation Safety Board, the Civil Aeronautics Board, the Federal Aviation Administration, the Department of Defense Office of Program Analysis and Evaluation, the U.S. Air Force Inspection and Safety Center at Norton Air Force Base, and insurance companies.
- II. **FLIGHT OPERATIONS AT HARRISBURG INTERNATIONAL AIRPORT.** For operations during the past 5 years, to the extent possible, data should be obtained, on a year-by-year basis, on the actual aircraft type (*e.g.*, C-5A, 707), for aircraft over 200,000 pounds; the

operator (*e.g.*, Air Force, scheduled, nonscheduled); the gross weight of each operation; the end of the runway used; and the type of operation (*e.g.*, takeoff, landing, touch-and-go). The type of ground control equipment at the Harrisburg International Airport should be specified, including any changes approved but not accomplished, either upgrading or abandonment of equipment.

III. FUTURE TRAFFIC. For traffic at the Harrisburg airport during the next 5 years, forecasts should be obtained on a year-by-year basis from the airport, the U.S. Air Force, and the Federal Aviation Administration.

IV. INFORMATION ON LANDING AND TAKEOFF PATTERNS AT HARRISBURG INTERNATIONAL AIRPORT. A template should be prepared showing the takeoff and landing patterns, and indicating the location of the Three Mile Island site. Information should be obtained on: standard guidance (if any) given to aircraft; whether one area or one landing and takeoff pattern is usual (*e.g.*, for noise control or because of prevailing wind conditions); whether, and if so, how often, the Three Mile Island site is overflowed; and the feasibility of using landing and takeoff patterns which do not overflow the Three Mile Island site.

V. ANALYSIS. An analysis and estimate should be made of the type of probability distribution appropriate in drawing conclusions on the basis of very limited data. The estimate should include an estimate of the uncertainty. It may be desirable to develop both an estimate of the probability of crash per operation for operations in the U.S., based on the data, and of the probability of hitting a given area in the event of a crash, based on aerodynamic analysis. The data outlined above should then be analyzed to give an estimate of the likelihood of crash by type of aircraft at Harrisburg International Airport. The analysis should also include an examination of the combinations of weight heavier than 200,000 pounds and lower speed which would lead to impact equivalent to that of the crash (200,000 pounds at 200 knots) that is the design basis for the Three Mile Island, Unit No. 2, facility.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION.

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Thomas S. Moore, Chairman
Dr. John H. Buck
Stephen F. Ellperin

In the Matter of

Docket Nos. 50-387-OL
50-388-OL

PENNSYLVANIA POWER AND
LIGHT COMPANY and
ALLEGHENY ELECTRIC
COOPERATIVE, INC.

(Susquehanna Steam Electric Station,
Units 1 and 2)

September 28, 1982

The Appeal Board dismisses an intervenor's appeal from the Licensing Board's initial decision (LBP-82-30, 15 NRC 771 (1982)) authorizing the issuance of full-power operating licenses for Units 1 and 2 of this facility. The Appeal Board notes that the initial decision does not constitute final agency action until it completes *sua sponte* review of it.

RULES OF PRACTICE: BRIEFS

A party's brief must (1) specify the precise portion of the record relied upon in support of the assertion of error, 10 CFR 2.762(a), and (2) relate to matters raised in the party's proposed findings of fact and conclusions of law. An appeal board will not ordinarily entertain arguments raised for the first time on appeal, absent a serious substantive issue. *Public Service Electric and Gas Co., et al.* (Salem Nuclear Generating Station, Unit 1), ALAB-650, 14 NRC 43, 49 (1981); *Tennessee Valley Authority* (Hartsville Nuclear Plant, Units 1A, 2A, 1B, and 2B),

ALAB-463, 7 NRC 341, 348 (1978). See also *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-691, 16 NRC 897, 906-907 (1982).

RULES OF PRACTICE: BRIEFS

An appeal may be dismissed when a party's brief contains only conclusory assertions without sufficient information to dispose of its arguments intelligently. *Public Service Co. of Oklahoma, et al.* (Black Fox Station, Units 1 and 2), ALAB-573, 10 NRC 775, 786-87 (1979). See also *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), ALAB-355, 4 NRC 397, 413 (1976).

OPERATING LICENSE PROCEDURES: RESPONSIBILITY OF NRC STAFF (COMPLIANCE WITH NEPA; AEA)

Prior to issuing an operating license, the Director of Nuclear Reactor Regulation must find that Commission regulations (including those implementing NEPA) have been satisfied and that the activities authorized by the license can be conducted without endangering the health and safety of the public. See 10 CFR 50.40(d), 50.57; *Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-455, 7 NRC 41, 44 (1978), *remanded on other grounds sub nom. Minnesota v. Nuclear Regulatory Commission*, 602 F.2d 412 (D.C. Cir. 1979).

RULES OF PRACTICE: RESPONSIBILITIES OF PARTIES

Lay representatives generally are not held to the same standard for appellate briefs that is expected of lawyers. *Salem, supra*, 14 NRC at 50 n.7. Nonetheless, NRC litigants appearing *pro se* or through lay representatives are in no way relieved by that status of any obligation to familiarize themselves with the Commission's rules. To the contrary, all individuals and organizations electing to become parties to NRC licensing proceedings can fairly be expected both to obtain access to a copy of the rules and refer to it as the occasion arises. *Pennsylvania Power and Light Co. and Allegheny Electric Cooperative, Inc.* (Susquehanna Steam Electric Station, Units 1 and 2), ALAB-563, 10 NRC 449, 450 n.1 (1979).

RULES OF PRACTICE: RESPONSIBILITIES OF PARTIES

An intervenor in NRC licensing proceedings has a basic obligation to "structure [its] participation so that it is meaningful, so that it alerts the agency to [its] position

and contentions." *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc.*, 435 U.S. 519, 553 (1978).

APPEARANCES

Mr. Thomas J. Halligan, Scranton, Pennsylvania, for the intervenor, Citizens Against Nuclear Danger.

Messrs. Jay E. Silberg and Matias F. Travieso-Diaz, Washington, D.C., for the applicants, Pennsylvania Power and Light Company and Allegheny Electric Cooperative, Inc.

Mr. James M. Cutchin, IV, for the Nuclear Regulatory Commission staff.

MEMORANDUM AND ORDER

On April 12, 1982, the Licensing Board issued its initial decision (LBP-82-30, 15 NRC 771) authorizing the issuance of full-power operating licenses for Units 1 and 2 of the Susquehanna facility.¹ Appeals were timely filed by the Commonwealth of Pennsylvania and intervenor Citizens Against Nuclear Dangers (CAND). The Commonwealth subsequently withdrew its appeal, based upon our approval of a stipulation as to its sole concern, *i.e.*, the provision of adequate dosimetry for the protection of offsite emergency workers from radiological exposure. See Order of September 16, 1982 (unpublished). Thus, the only remaining appeal is that filed by intervenor CAND. The applicants and the NRC staff ask that we dismiss CAND's appeal. For the reasons set forth below, we do so.²

CAND's appellate submissions are vague and unenlightening. Its three-page brief summarily asserts that the Licensing Board did not evaluate the relevant

¹ By order issued August 9, 1982, the Commission completed its "immediate effectiveness" review favorably to the applicants. See 10 CFR 2.764(f) (1982). The Director of Nuclear Reactor Regulation issued an operating license for Unit 1 on July 17, 1982. 47 *Fed. Reg.* 32225 (July 26, 1982).

² We must still complete our *sua sponte* review on issues other than dosimetry (which we disposed of in our September 16, 1982 order) before the initial decision becomes final agency action. See *Offshore Power Systems* (Manufacturing License for Floating Nuclear Plants), ALAB-689, 16 NRC 887, 890-91 (1982).

environmental "assessments" (*i.e.*, impacts) or consider available alternatives.³ CAND claims, again without offering factual support or references, that some of the environmental data in the staff's Final Environmental Statement were presented "in a misleading fashion."⁴ CAND asks that a new Environmental Impact Statement be prepared and the license conditioned to require a finding by the Director of Nuclear Reactor Regulation, prior to plant operation, that all provisions of the National Environmental Policy Act (NEPA), 42 U.S.C. 4321 *et. seq.*, have been fully implemented. CAND Brief at 2. In addition to not providing any support, record or otherwise, for its arguments, CAND did not file proposed findings of fact and conclusions of law on these NEPA issues with the Licensing Board.⁵

This failure of CAND to provide both the Licensing Board and us with any support for its assertions reveals a complete lack of appreciation of the requirements of our Rules of Practice. We have stated that those Rules

were not promulgated capriciously. They were drafted to insure that, when followed, the arguments and positions of all parties — applicants, staff and intervenors — would be spread fully upon the record in order to permit fair rebuttal by those holding opposing views and to facilitate our ultimate evaluation of the competing contentions. Disregard of the Rules frustrates those salutary purposes and burdens rather than assists the adjudicator's task.

Consumers Power Co. (Midland Plant, Units 1 and 2), ALAB-270, 1 NRC 473, 476 (1975). Accordingly, the Rules require that a party's brief specify the precise

³ See CAND Brief (May 21, 1982) at 1-2. There was, of course, a Final Environmental Statement (FES) prepared by the NRC staff. It evaluated the environmental impacts of the grant of an operating license for the Susquehanna facility and alternatives to plant operation — most pertinently the no-action alternative. See NUREG-0564 (June 1981). Thus, the FES stated (*id.* at 7-6):

The staff believes that the only reasonable alternative to the proposed action of granting an operating license for SSES available for consideration at the operating license stage is denying the license for operation of the facility and thereby not permitting the constructed nuclear facility to be added to the applicant's generating system. Alternatives such as construction at alternative sites, extensive station modification, or construction of facilities utilizing different energy sources would each require additional construction activity with its accompanying economic and environmental costs, whereas operation of the already constructed plant would not create these costs. Therefore, unless major safety or environmental concerns resulting from operating the plant that were not evident and considered during the construction-permit review are revealed, these alternatives are unreasonable as compared to operating the already constructed plant. No such concerns have been revealed with regard to operation of SSES.

So too, the Licensing Board considered the contested environmental issues. See generally 15 NRC at 773-77. 787-93.

⁴ CAND Brief at 3. The same kind of assertions form the basis of CAND's exceptions to the initial decision. See CAND Exceptions (April 21, 1982) at 2.

⁵ CAND filed what it termed "proposed findings of facts and conclusions of law" on March 26 and April 2, 1982. The filings were three months late, and neither raised environmental issues. The Board ruled that the filings were untimely if considered as proposed findings. Treating the filings as motions to reopen, the Board ruled that the motions failed to meet the standards required for reopening. Licensing Board Order of April 22, 1982 (unpublished).

portion of the record relied upon in support of the assertion of error. 10 CFR 2.762(a). It must also relate to matters raised in the party's proposed findings of fact and conclusions of law. *Public Service Electric and Gas Co., et al.* (Salem Nuclear Generating Station, Unit 1), ALAB-650, 14 NRC 43, 49 (1981).⁶

CAND's submissions fall far short of these requirements. Its brief contains only conclusory assertions of insufficient environmental analysis and alleged wrongdoing. These naked assertions leave us without sufficient information to dispose of its arguments intelligently.⁷ We noted on an earlier occasion:

Disregarding similarly vague contentions in an appellant's brief, the Court of Appeals for the Seventh Circuit cogently observed that "[i]t is impossible for a [tribunal] to consider general allegations such as these." *United States Steel Corp. v. Train*, [556 F.2d 822, 837 (1977)]. We have no choice but to follow that course here. Because inadequate briefing has made their arguments "impossible of resolution," we dismiss intervenors' exceptions on this point.

Public Service Co. of Oklahoma, et al. (Black Fox Station, Units 1 and 2), ALAB-573, 10 NRC 775, 787 (1979) (footnote omitted). See also *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), ALAB-355, 4 NRC 397, 413 (1976).

We recognize that CAND's representative is not an attorney, and that as a rule we do not hold lay representatives to the same standard for appellate briefs that we expect lawyers to meet. *Salem, supra*, 14 NRC at 50 n.7. Nonetheless, we have previously admonished CAND as to the importance of compliance with the Commission's procedural requirements. In ALAB-563, 10 NRC 449, 450 n.1 (1979), we stated unequivocally that NRC litigants appearing *pro se* or through lay representatives are in no way relieved by that status

of any obligation to familiarize themselves with [the Commission's] rules. To the contrary, all individuals and organizations electing to become parties to NRC licensing proceedings can fairly be expected both to obtain access to a copy of the rules and to refer to it as the occasion arises. . . . [S]hould such reference leave the *pro se* litigant or lay representative

⁶ This is because we will not ordinarily entertain arguments raised for the first time on appeal, absent a serious substantive issue. *Salem, supra*, 14 NRC at 49; *Tennessee Valley Authority* (Hartsville Nuclear Plant, Units 1A, 2A, 1B, and 2B), ALAB-463, 7 NRC 341, 348 (1978). See also *Consumers Power Company* (Midland Plant, Units 1 and 2), ALAB-691, 16 NRC 897, 906-07 (1982).

⁷ We note, however, that the "NEPA compliance" license condition CAND requests (see p. 955, *supra*), is already imposed as a matter of NRC regulation. Before the Director issued the operating license for Susquehanna Steam Electric Station Unit 1, see n. 1 *supra*, he was obliged to and did find that Commission regulations, including those implementing NEPA, had been satisfied and that the activities authorized by the license could be conducted without endangering the health and safety of the public. See 10 CFR 50.40(d), 50.57; *Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-455, 7 NRC 41, 44 (1978), *remanded on other grounds sub nom. Minnesota v. Nuclear Regulatory Commission*, 602 F.2d 412 (D.C. Cir. 1979); Facility Operating License No. NPF-14, para. 1(H) (July 17, 1982).

uncertain regarding precisely what procedural steps can or should be taken by him in certain circumstances, he undoubtedly will be able to obtain the guidance of staff counsel. Whether or not in agreement with the position of an intervenor on the merits of the issues presented in the particular proceeding, the staff traditionally has manifested a commendable willingness to provide that type of assistance.

In this regard, we note that staff counsel has represented to us that he provided CAND's representative with sample proposed findings and on more than one occasion in the course of this proceeding, offered him guidance in procedural matters.⁸

Our concern here is not with technical pleading requirements, but with the basic obligation of an intervenor in our proceedings to "structure [its] participation so that it is meaningful, so that it alerts the agency to [its] position and contentions." *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc.*, 435 U.S. 519, 553 (1978). A totally deficient brief, such as we have here, provides us no more assistance than no brief at all. It does not merit special consideration merely because it was prepared by a layman. See *Houston Lighting and Power Co.* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-590, 11 NRC 542, 546 (1980); *Public Service Electric and Gas Co.* (Salem Nuclear Generating Station, Units 1 and 2), ALAB-136, 6 AEC 487, 489 (1973).

CAND's appeal is *dismissed*.

It is so ORDERED.

FOR THE APPEAL BOARD

Barbara A. Tompkins
Secretary to the
Appeal Board

⁸ Staff Brief (July 6, 1982) at 16 n.11.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Alan S. Rosenthal, Chairman
Christine N. Kohl
Howard A. Wilber

In the Matter of

Docket No. 50-395-OL

SOUTH CAROLINA ELECTRIC & GAS
COMPANY, *et al.*
(Virgil C. Summer Nuclear Station,
Unit 1)

September 28, 1982

The Appeal Board dismisses exceptions filed by the applicants to the Licensing Board's partial initial decision in this operating license proceeding (LBP-82-55, 16 NRC 225 (1982)). The Appeal Board announces it will undertake *sua sponte* review of that decision and a later Licensing Board partial initial decision (LBP-82-57, 16 NRC 477 (1982)), authorizing the issuance of an operating license for the plant, and reminds the parties that neither initial decision shall be deemed to have achieved administrative finality pending the completion of that review and further order.

RULES OF PRACTICE: APPELLATE PROCEDURE

Exceptions are not necessary to defend a decision in one's favor. Only where a party is aggrieved by or dissatisfied with the action taken below and invokes the Appeal Board's jurisdiction to change the result need exceptions be filed — or are they permitted. *Public Service Co. of Indiana, Inc.* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-459, 7 NRC 179, 202 (1978). See also *Duke Power Co.* (Cherokee Nuclear Station, Units 1, 2 and 3), ALAB-478, 7 NRC 772, 773 (1978); *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-282, 2

NRC 9, 10 n.1 (1975); *Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-252, 8 AEC 1175, 1177, *affirmed*, CLI-75-1, 1 NRC 1 (1975); *Toledo Edison Co.* (Davis-Besse Nuclear Power Station), ALAB-157, 6 AEC 858, 859 (1973).

APPEARANCES

Messrs. Joseph B. Knotts, Jr., and Jeb C. Sanford, Washington, D.C., and Mr. Randolph R. Mahan, Columbia, South Carolina, for the applicants, South Carolina Electric & Gas Company, *et al.*

Mr. Steven C. Goldberg for the Nuclear Regulatory Commission Staff.

MEMORANDUM AND ORDER

By our order of August 24, 1982 (unpublished), the applicants were directed to show cause why we should not dismiss their exceptions to the Licensing Board's July 20, 1982 partial initial decision in this operating license proceeding.¹ The basis of the order was that, although the exceptions complained about several aspects of the Licensing Board's treatment of seismic issues, applicants did not appear to challenge to any extent the ultimate result reached on those issues. Specifically, the exceptions did not seek the elimination of either of the two seismic conditions that the Board directed be imposed upon any operating license issued for the Summer facility.² In this connection, we pointed (order, p. 2) to the settled rule that

exceptions are not necessary to defend a decision in one's favor. Only where a party is aggrieved by, or dissatisfied with, the action taken below and invokes our appellate jurisdiction to change the result need exceptions be filed — *or are they permitted.*

Public Service Co. of Indiana, Inc. (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-459, 7 NRC 179, 202 (1978) (emphasis supplied). See also *Duke Power Co.* (Cherokee Nuclear Station, Units 1, 2, and 3), ALAB-478, 7 NRC 772, 773 (1978); *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-

¹ See LBP-82-55, 16 NRC 225. That decision was confined to seismic matters and did not authorize the issuance of an operating license. In a subsequent supplemental decision, the Board conferred such authorization on the strength of its resolution of the remaining issues. LBP-82-57, 16 NRC 447 (1982). The applicants have not filed exceptions to the supplemental decision and no other party to the proceeding has excepted to either decision.

² LBP-82-55, *supra*, 16 NRC at 267.

282, 2 NRC 9, 10 n.1 (1975); *Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-252, 8 AEC 1175, 1177, *affirmed*, CLI-75-1, 1 NRC 1 (1975); *Toledo Edison Co.* (Davis-Besse Nuclear Power Station), ALAB-157, 6 AEC 858, 859 (1973).

We now have in hand the applicants' response to the show cause order and the NRC Staff's reply to that response.³ For their part, the applicants acknowledge that they are not aggrieved by the *result* reached in the July 20 decision. They insist, however, that certain findings and conclusions contained in the decision might be taken by the Staff as constraining applicants' "future evaluation of past and future earthquakes, including comparisons between and among events," thereby causing them "discernible injury." We are told that "[p]erhaps the most significant constraint would be limitations on use of data, models, and theories in future analyses."⁴

In its reply, the Staff takes issue with these claims. Among other things, it finds nothing in the portions of the July 20 decision to which applicants object that might inhibit a future "complete and thorough analysis" of seismic events "on the basis of the best information available at the time."⁵ For this reason, the Staff considers the applicants' asserted injury to be "too remote and speculative" to provide the foundation of an appeal.⁶

Given the Staff's position, the applicants' fears underlying their appeal may now be allayed. In any event, on full consideration of both the July 20 decision and the submissions of the parties in connection with the show cause order, we are compelled to the conclusion that applicants have not demonstrated a sufficiently concrete threat of harm to their interests to support the exceptions. More particularly, we do not take the July 20 decision as, either in intent or in effect, circumscribing the applicants' utilization of all then available "data, models and theories" should the need arise to evaluate new seismic developments. Because the Staff shares this view, there appears to be no reasonable possibility that Staff reviewers would reject an applicants' evaluation on the basis that it went beyond Licensing Board-imposed limitations.⁷

³ Although likewise invited to do so, no other party to the proceeding replied to the applicants' submission.

⁴ Applicants' Response to Order to Show Cause (September 7, 1982), p. 3. We note that the applicants do not contend that there are extraordinary circumstances here that justify entertaining their appeal in the absence of discernible injury to them. *Id.*, p. 2. Cf. *Carolina Power and Light Co.* (Shearon Harris Nuclear Power Plant, Units 1, 2, 3, and 4), ALAB-577, 11 NRC 18, 23-25, *reversed in part on other grounds*, CLI-80-12, 11 NRC 514 (1980); *Prairie Island*, *supra*, 8 AEC at 1177-78.

⁵ NRC Staff Reply to Applicant Response to Order to Show Cause (September 22, 1982), pp. 7-8.

⁶ *Id.*, p. 6. The Staff also takes issue with the applicants' insistence that collateral estoppel or *res judicata* effect might be accorded the findings of fact of which they complain. *Id.*, pp. 6-7.

⁷ Applicants' exception 21 complains of a perceived implication in the July 20 decision that the lead applicant had not timely apprised the Licensing Board of certain relevant information. The applicants deem that implication to be "unwarranted" and to reflect unfairly upon the lead applicant's "fulfillment of its obligations as a party." Response, p. 9. Whether unjust or not, an assessment made by a Licensing Board respecting the diligence of a litigant before it is not fit grist for the appellate mill in the absence, as here, of an imposed sanction to which exception is properly taken.

Accordingly, the exceptions are hereby *dismissed* and this Board will now undertake its review *sua sponte* of the two initial decisions. See *Offshore Power Systems* (Manufacturing License for Floating Nuclear Power Plants), ALAB-689, 16 NRC 887, 890-91 (1982). Pending the completion of that review and further order of this Board, neither decision shall be deemed to have achieved administrative finality.⁸

It is so ORDERED.⁹

FOR THE APPEAL BOARD

Barbara A. Tompkins
Secretary to the
Appeal Board

⁸ In the course of announcing the outcome of the *sua sponte* review, we may have occasion to speak further to the matter of the future operative effect of the portions of the July 20 decision to which the applicants object.

⁹ Nothing in this order bears upon the motion filed with the Licensing Board by intervenor Brett Bursey, seeking to reopen the record on a quality assurance question. That motion is still before the Licensing Board. See its September 24, 1982 memorandum and order (unpublished) in which the Board, although denying his request for a suspension *pendente lite* of the Summer operating license, afforded Mr. Bursey the opportunity to make a further submission on the reopening matter.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Alan S. Rosenthal, Chairman
Thomas S. Moore
Dr. Reginald L. Gotchy

In the Matter of

Docket Nos. 50-237
50-249
(Spent Fuel Pool
Modification)

COMMONWEALTH EDISON COMPANY
(Dresden Station, Units 2 and 3)

September 29, 1982

On completion of its *sua sponte* review of the Licensing Board's two initial decisions in this spent fuel pool modification proceeding (LBP-81-37, 14 NRC 708 (1981); LBP-82-65, 16 NRC 714 (1982)) (undertaken in the absence of any exceptions to either decision), the Appeal Board affirms the Licensing Board's decisions permitting (1) the modification of Unit 3's spent fuel pool; and (2) allowing the sought increase in spent fuel pool storage capacity for Units 2 and 3.

DECISION

The Licensing Board rendered two initial decisions in this proceeding involving Units 2 and 3 of the Dresden Nuclear Facility. In LBP-81-37, 14 NRC 708 (1981), the Board sanctioned a modification of the operating license for Unit 3 to permit the installation of five high-density storage racks in that unit's spent fuel pool. In LBP-82-65, 16 NRC 714 (1982), it authorized the issuance of amendments to the operating licenses for the two units. Those amendments would allow the full increase in spent fuel pool storage capacity sought by Commonwealth Edison.

No exceptions have been filed to either decision. Accordingly, as is customary in such circumstances, we have reviewed both Licensing Board decisions on our own initiative.¹ That review, which has included an examination of substantial portions of the underlying evidentiary record, has disclosed no error necessitating corrective action. Accordingly, the result reached by the Licensing Board is *affirmed*.

It is so ORDERED.

FOR THE APPEAL BOARD

Barbara A. Tompkins
Secretary to the
Appeal Board

¹ Review *sua sponte* of the 1981 partial initial decision was deferred to await the Licensing Board's ultimate decision of the license amendment application. See our order of November 9, 1981 (unpublished).

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Lawrence Brenner, Chairman
Dr. Richard F. Cole
Dr. Peter A. Morris

In the Matter of

Docket Nos. 50-352
50-353

PHILADELPHIA ELECTRIC COMPANY
(Limerick Generating Station,
Units 1 and 2)

September 2, 1982

The Licensing Board denies a motion to admit a contention concerning psychological stress caused by viewing a cooling tower plume because the Licensing Board is not authorized by the Commission to admit such a contention, the contention is without basis, and the motion was not timely.

NEPA: PSYCHOLOGICAL STRESS

As required by the Commission's policy statement of July 22, 1982 (47 Fed. Reg. 31762), a Licensing Board is without authority to admit a contention alleging that psychological stress will result from the operation of a nuclear plant when no serious nuclear accident has occurred at the site.

NEPA: PSYCHOLOGICAL STRESS

A contention alleging that psychological stress will result from operation of a nuclear power plant may not be litigated if it is without basis even if it otherwise satisfied the Commission's criteria for admitting psychological stress contentions.

MEMORANDUM AND ORDER
(DENYING REQUEST OF FOE TO ADMIT CONTENTION V-1
BASED ON "NEW MATTER")

In its Special Prehearing Conference Order (SPCO) of June 1, 1982, LBP-82-43A, 15 NRC 1423, the Licensing Board ordered that proposed Contention V-1 not be admitted for litigation in this proceeding. Contention V-1 states:

The environmental reports for the Limerick nuclear plant do not comply with the requirements under the National Historic Preservation Act and NEPA for the protection of historic sites such as Hopewell Village, Valley Forge National Park, and the Schuylkill River Canal.

As part of the basis for the proposed contention, its sponsor FOE states that visibility of the cooling tower plume would be a deterrent to visitors to Hopewell Village and Valley Forge. In rejecting this contention, the Board found that "no basis is given for the proposition that viewing the plume will cause people to become alarmed about possible radiation exposure." SPCO at 1513.

On July 7, 1982, FOE filed a "Submission of a Contention Based on New Matter" by which FOE seeks to resubmit Contention V-1.* The "new matter" on which this resubmission is based is the decision in *People Against Nuclear Energy v. NRC*, 678 F.2d 222 (D.C. Cir. 1982) *petition for cert. filed*, 51 U.S.L.W. 3006 (U.S. July 1, 1982) (*PANE*), which required the Commission to consider the psychological health effects of restarting Unit 1 at Three Mile Island in deciding whether NEPA required issuance of a supplemental environmental impact statement concerning the action. *Id.* at 233-34.

There are several reasons why the Board is not admitting this contention. The Commission interprets the *PANE* decision to require consideration of psychological stress impacts under NEPA only under the following conditions:

First, the impacts must consist of "post-traumatic anxieties," as distinguished from mere dissatisfaction with agency proposals or policies. Second, the impacts must be accompanied by physical effects. Third, the "post-traumatic anxieties" must have been caused by "fears of recurring catastrophe." This third element means that some kind of nuclear accident must already have occurred at the site in question. . . . Moreover, the majority clearly had only serious accidents in mind. . . . In the Commission's view, the only nuclear plant accident that has occurred to date that is sufficiently serious to trigger consideration of psychological stress under NEPA is the Three Mile Island Unit 2 accident. Accordingly, only this

*FOE refers in its filing to Contention V-3, but from the context of the resubmission it is apparent that it intended to resubmit Contention V-1.

accident can currently serve as a basis for raising NEPA psychological stress issues.

NRC Policy Statement on Consideration of Psychological Stress Issues, 47 *Fed. Reg.* 31762 (July 22, 1982).

The Commission has authorized Licensing Boards to admit NEPA contentions alleging psychological stress caused by activities licensed by the NRC only if all the above conditions are satisfied. *Id.* Since the only accident sufficiently serious in the Commission's view to trigger consideration of psychological stress did not occur at the Limerick site, and since the Commission requires that a serious nuclear accident must have occurred at the site in question before a NEPA contention relating to psychological stress may be admitted, this Board is not authorized by the Commission to admit Contention V-1.

Even if the Commission's criteria for admitting a psychological stress contention for the Limerick site had been satisfied, however, the requirement for a sufficient basis for the contention would remain. *Id.* It was precisely because Contention V-1 lacked a sufficient basis that the Board rejected it in the first place. SPCO at 1513. No further basis is provided in the new submission. Therefore, the contention continues to be inadequate because it lacks a basis.

In addition, the filing by FOE is not timely. It appears that FOE is, in effect, asking the Board to reconsider its ruling in the SPCO. Requests for reconsideration were due within 10 days of service of the SPCO. SPCO at 1521. (The Board had allowed five days more than were called for by NRC rules in light of the length of the SPCO.) FOE's filing was served three weeks after that time. The Court's decision in *PANE* was issued on January 7, 1982, and the supporting opinions were issued on May 14, 1982. Thus, FOE could have called them to the Board's attention before the SPCO was filed on June 1, 1982 and certainly within the period for reconsideration. The Board was, in fact, cognizant of the *PANE* decision and subsequent supporting opinions at the time it issued the SPCO.

For all the above reasons, FPE's request that Contention V-1 be admitted is denied.

IT IS SO ORDERED.

FOR THE ATOMIC SAFETY
AND LICENSING BOARD

Lawrence Brenner, Chairman
ADMINISTRATIVE JUDGE

Bethesda, Maryland
September 2, 1982

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Lawrence Brenner, Chairman
Dr. Richard F. Cole
Dr. Peter A. Morris

In the Matter of

Docket Nos. 50-352
50-353

PHILADELPHIA ELECTRIC COMPANY
(Limerick Generating Station,
Units 1 and 2)

September 3, 1982

The Licensing Board reaffirms its holding that a preclusion clause in the Delaware River Basin Compact renders the Licensing Board without jurisdiction to reassess the impacts of an allocation of water from the Delaware River made by the Delaware River Basin Commission.

LICENSING BOARD: JURISDICTION; INTERSTATE COMPACT

Pursuant to section 15.1(s)(1) of the Delaware River Basin Compact, the Licensing Board is precluded from reassessing the impacts of a decision by the Delaware River Basin Commission, concurred in by the Federal member of the Commission, allocating water from the Delaware River for the cooling of a nuclear plant.

MEMORANDUM AND ORDER
**(Denying Del-Aware's Request for Reconsideration of DRBC Preclusion
on Water Allocation Issues)**

On August 8, 1982, Del-Aware Unlimited, Inc. (Del-Aware) filed an Application for Reconsideration of this Board's finding (set forth in a Memorandum and Order dated July 14, 1982, ruling on objections to the Special Prehearing Conference Order) that the Board is precluded from considering matters concerning the allocation of Delaware River water for cooling the Limerick plant. Both the Applicant and the Staff have filed responses to Del-Aware's Application.

The preclusion in question arises under section 15.1(s)(1) of the Delaware River Basin Compact, which states, in part:

[W]henever a comprehensive plan, or any part or revision thereof, has been adopted with the concurrence of the member appointed by the President of the United States, the exercise of any powers conferred by law on any officer, agency or instrumentality of the United States with regard to water and related land resources in the Delaware River Basin shall not substantially conflict with any such portion of such comprehensive plan . . .

Pub. L. No. 87-328, 75 Stat. 688 (1961).

The Board held that it was precluded, by virtue of the federal representative's affirmative vote on inclusion of the Point Pleasant diversion in the Comprehensive Plan, from considering contention V-16 as it related to an increase in the salinity gradient in the Delaware River. (Order of July 14, 1980, at 18-19.) The Board explained that a change in the salinity gradient could result if the quantity of water used in cooling Limerick were withdrawn, whatever its use. It would be the quantity of water withdrawn, not its particular use, which would lead to the changes in salinity. Moreover, any change in salinity would result not just from this water withdrawal, but from the total quantity of water withdrawn for uses approved by the Delaware River Basin Commission (DRBC). Special Prehearing Conference Order (SPCO), LBP-82-43A, 15 NRC 1423, 1484-85 (1982). *See also id.* at 1468-69.

DRBC is charged with regulating the water supply and uses of water in the Delaware River Basin. SPCO at 1469. This includes, necessarily, the authority to decide for which of several competing possible uses water will be allocated. Since changes in the salinity gradient would result directly from the allocation without regard to how it is used, the remedy for these changes would be to change the allocation. A decision to change the allocation would substantially conflict with DRBC's decision authorizing it, and therefore would be the type of action precluded by section 15.1(s) of the compact. Since NRC cannot change the allocation causing the alleged salinity changes, it would be a pointless exercise for

NRC to reconsider by litigation in this hearing the causes and possible remedies of any such changes in salinity in the Delaware River and one in which NRC need not engage. *Cf. Public Service Company of New Hampshire, et al.* (Seabrook Station, Units 1 and 2), CLI-78-1, 7 NRC 1, 24 (1978) (NRC need not relitigate issue of environmental impacts caused by cooling system when bound to accept cooling system authorized by EPA).

Because the section 15.1(s) preclusion would bar the NRC from considering salinity gradient questions, it is important that this Board determine whether the federal representative to DRBC, Governor Tribbitt, concurred in the decision to add the Point Pleasant diversion to the comprehensive plan. The Board held in its July 14 Order that Governor Tribbitt had, in fact, concurred in the decision. Order at 18. Del-Aware seeks reconsideration of that holding by the Board alleging that Governor Tribbitt based his concurrence on his explicit understanding that "the NRC would resolve all environmental issues relating to the withdrawal of Delaware River water (the allocation)." Application for Reconsideration (August 8, 1982) at 1.

The Board is concerned with the question of whether or not the federal member of the DRBC concurred in the decision, not with his reasons for doing so. *Cf. Nothdurft v. Ross*, 104 Misc.2d 898 (N. Y. Sup. Ct. 1980) (beyond the province of the judiciary to hypothesize about the motives of legislature in enacting statute), *aff'd* 445 N.Y.S.2d 222 (N.Y. App. Div. 1981). Del-Aware does not dispute that Governor Tribbitt voted for the addition to the comprehensive plan, but appears to suggest the vote was conditional. Chaos would result if an individual's vote on a proposal could be conditional. Imagine the impossibility of determining the conditions imposed on an affirmative vote and deciding whether at any point in time there were sufficient affirmative votes to render a proposal effective. The Supreme Court, recognizing the problems which would result from questioning the authenticity of recorded votes, held long ago that the journal of the Congress in which votes are recorded "must be assumed to speak the truth." *United States v. Bollin, Joseph & Co.*, 144 U.S. 1, 4 (1892).

The transcript of the February 18, 1981 meeting of the DRBC at which the proposals were discussed and voted upon shows a unanimous roll call vote by all the Commissioners. DRBC transcript at 52. Governor Tribbitt was present at that meeting and apparently voted affirmatively. There is no indication that when he voted, he intended a conditional vote. The Board will not consider material apart from his vote which is intended to show that the vote was other than the unconditional affirmative vote it appears to be.¹

¹ We note that the Compact does provide a specific mechanism for the federal representative to indicate his nonconcurrence. In addition, a mechanism is available to withdraw concurrence although the time-frame on the latter is not clear to us from the provision of the Compact. §15.1(s)(2). However, there is no indication that any filing was made to prevent the presumption of federal concurrence.

In any event, it is far from clear from his statements in the transcript of the DRBC meeting that Governor Tribbitt was laboring under a misapprehension of the type of actions NRC would take in evaluating the environmental impacts of the Limerick plant. It is not clear to the Board from reading the transcript and the letters it references what Governor Tribbitt (or EPA) understood to be NRC's intentions. Indeed, this very lack of clarity illustrates the problems with considering the motives for a vote and reinforces our determination that we should not concern ourselves with questions of motives or conditions.

Even if the preclusion were not effective, however, we would not admit contention V-16. As we indicated in our special prehearing conference order, this is the type of issue for which the NRC Staff's reliance on DRBC's environmental studies is reasonable (particularly since the salinity gradient changes are attributable to total water withdrawal, not just isolated allocation). SPCO at 1485. There has been no showing that the NRC will use DRBC data improperly. Nor is there any indication that the changes that have occurred in the proposed location of the intake would change the impacts on the salinity gradient. In the circumstances, Del-Aware has not made the necessary showing for admission of the contention.

In addition, as pointed out by both the Staff and the Applicant, this filing by Del-Aware is untimely. Del-Aware was given an opportunity to comment on federal concurrence in the allocation decision within 30 days of the issuance of the June 1, 1982 SPCO. SPCO at 1485. It did not address the issue within that time. Nor was this motion filed within the five days provided by the rules for objections to special prehearing conference orders. 10 CFR §2.751a.² Del-Aware did not seek an extension of time for its filing or attempt to justify its lateness. Moreover, Del-Aware filed on August 25, 1982, a supplement to its request for reconsideration. This filing was made without Del-Aware's having obtained (or even requested) the Board's leave to make it. A moving party has no right of reply to answers in NRC proceedings (and we view this as, in effect, a reply) except as permitted by the presiding officer. 10 CFR §2.730.

In its supplement, Del-Aware seemingly expands its motion to seek reconsideration of the Board's determination that its consideration of environmental effects should be limited to the effects of changes since the Construction Permit review and approval by the Appeal Board.

We note preliminarily that motions for reconsideration of the SPCO were due within ten days of its service. This supplement was filed more than two months after the SPCO was filed. Therefore, it is untimely.

² Although not titled a special prehearing conference order, the July 14 Order essentially elaborates on the SPCO. Moreover, it would not have been timely even under the more lenient 10-day period allowed for petitions to reconsider final decisions which may be relied upon for general guidance in the absence of a particular provision applicable to non-final decisions issued by licensing boards. 10 CFR §2.771. See *Consumers Power Company* (Midland Plant, Units 1 and 2), ALAB-235, 8 AEC 645, 646 (1974). But see *Duke Power Company* (Perkins Nuclear Station, Units 1, 2 and 3), ALAB-597, 11 NRC 870, 874 n.8 (1980).

Nor is there any merit to the request for reconsideration. The 1973 DRBC EIS upon which Del-Aware relies does not indicate that the entire project was too indefinite to evaluate, but only that intake entrainment could not be evaluated. The Board accepted Del-Aware's contention concerning the impact of the intake on fish. See SPCO at 1479, contentions V-15 and V-16(a) (in part). Moreover, the Board did not limit its consideration to changes in the design as purported in Del-Aware's supplement, but rather to any significant changes since the construction permit review. Thus, the Board accepted a contention concerning impacts of intake operations on the newly proposed Point Pleasant historical district because it deemed the proposal of a historical district to be a significant change. SPCO at 1479, contention V-16b.

The Board considered at length in the SPCO the scope of its environmental review. See SPCO at 1456-81. It then applied its reasoning to the particular contentions which were proposed. Del-Aware's request is not similarly focused on the particular contentions. Such focus is necessary and should be provided in all future filings so that the Board knows the particular action sought.

Del-Aware also relies on an old January 5, 1981 letter from the Staff to the Applicant for the proposition that the Staff intended a broader review than the scope set forth by the Board. The Board established the scope of its review based on NEPA, NRC regulations, and applicable precedent. It did not rely on the Staff to define the scope of its review. The Staff may, if it desires, perform a more complete review than the minimum legally required.

In any event, nothing in the broad phrasing of the Staff's letter is inconsistent with the Board's rulings on the required scope of NRC review.³ Del-Aware characterizes the letter as a commitment that the NRC will once again review *ab initio* the entire issue of the supplemental cooling water system, without limitation to changes in circumstances. Del-Aware also argues that the letter demonstrates a Staff intention to review DRBC's allocation decision. Del-Aware's characterizations, particularly after the lengthy discussion of similar arguments in the SPCO, are unsupported by the language of the letter.

We are denying Del-Aware's request for reconsideration not just because it is untimely, but because it lacks merit. In addition, we caution Del-Aware to comply with the filings and time-frames allowed by the rules of practice. If in a particular instance they prove particularly onerous, Del-Aware should request in advance the Board's permission to make a particular filing at a particular time, explaining its

³ The letter from the Staff in pertinent part states:

Cooling water supply and the diversion of Delaware River water was discussed by several participants at the meeting. We recognize that the final design of the diversion project was not completed when the Final Environmental Statement was issued for your Construction Permits. Therefore, the staff will thoroughly review the environmental impacts associated with diversion of Delaware River water. This area should also be thoroughly discussed in your tendered application.

reasons. Unauthorized or untimely filings made without the Board's permission will be ignored in the future.

IT IS SO ORDERED.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**Lawrence Brenner, Chairman
ADMINISTRATIVE JUDGE**

**Dr. Richard F. Cole
ADMINISTRATIVE JUDGE**

**Dr. Peter A. Morris
ADMINISTRATIVE JUDGE**

**Bethesda, Maryland
September 3, 1982**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Lawrence Brenner, Chairman
Dr. James H. Carpenter
Dr. Peter A. Morris**

In the Matter of

Docket No. 50-322-OL

**LONG ISLAND LIGHTING COMPANY
(Shoreham Nuclear Power Station
Unit 1)**

September 3, 1982

Ruling on the effects of potential conflicts of interest which the Board had noted because applicant's contractor for its probabilistic risk assessment had also served as a subcontractor for the NRC Staff on certain aspects of the Staff's systems interaction program, the Licensing Board concludes that in the interest of fundamental fairness to all parties, the Staff should have noted the existence of such potential conflicts of interest on the record, together with a description of any steps taken to avoid or mitigate their effects. However, in the circumstances of this case, the Board holds that any defects in the fairness of this proceeding were cured by the Board's discovery and disclosure of this potential conflict of interest, which gave all parties the opportunity for cross-examination on this point, and by the Staff's obvious lack of reliance on its subcontractor's views in its testimony in this proceeding.

RULES OF PRACTICE: RESPONSIBILITIES OF PARTIES

Parties to Commission proceedings have the obligation to disclose all potential conflicts of interest, whether or not a party believes them to be material and relevant to a licensing proceeding. Such disclosure permits other parties the

opportunity to cross-examine opposing witnesses regarding any bias which may be alleged to exist as a result of a potential conflict of interest.

RULES OF PRACTICE: ADMINISTRATIVE FAIRNESS

Fundamental fairness dictates that parties to Commission proceedings disclose all potential conflicts of interest, whether or not a party believes them to be material and relevant to a licensing proceeding. While the "materiality and relevance" of new information is required to be considered in determining whether a party has a duty to disclose such new information in an NRC proceeding, *Tennessee Valley Authority* (Browns Ferry Nuclear Plant, Units 1, 2 and 3), ALAB-677, 15 NRC 1387 (1982); *Duke Power Co.* (McGuire Nuclear Station, Units 1 and 2), ALAB-143, 6 AEC 623, 625 (1973), these standards are not applicable in a situation where there is an issue as to the fundamental fairness of the conduct of parties to a proceeding. Fundamental fairness clearly requires the disclosure of potential conflicts of interest, such that, after opposing parties have had an opportunity for cross-examination, the Board may determine the materiality of such information.

MEMORANDUM AND ORDER REGARDING SAI AND POTENTIAL CONFLICTS OF INTEREST

I. BACKGROUND

On June 24, 1982, the Board requested on the record (Tr. 5348-5353, 5420-54) that Staff, LILCO and any other party wishing to comment provide us with an assessment as to any conflict of interest problems which might exist because LILCO's contractor for its Shoreham probabilistic risk assessment (PRA), Science Applications, Inc. (SAI), has also served as a subcontractor for the NRC Staff on certain aspects of the Staff's systems interaction program (Tr. 5350). As a part of this request, we asked the parties to comment not only upon whether the technical legal standards for avoiding conflicts of interest under government procurement standards had been met, but also whether any questions of propriety or fairness were raised by SAI's participation as a witness in this proceeding on behalf of LILCO, after having performed certain work for the Staff, and whether any particular care was deemed appropriate to ensure the proper separation between LILCO's preparation of its application and the review of that application by the Staff. (Tr. 5350, 5421.) Additionally, as the Board had only inadvertently learned of this situation, we asked the parties to provide us with some explanation as to why SAI's status as a contractor for the NRC, LILCO and various other utilities

had not been disclosed in either this proceeding or in any other proceeding in which SAI has apparently performed at least somewhat of a dual role (Tr. 5351, 5421-5422).

In response to what we took pains to describe as our "preliminary" information request (Tr. 5421), we received LILCO's July 1, 1982 response, supplemented by a letter dated July 2, 1982, as well as the Staff's interim and final reports on this matter, dated July 1 and July 23, 1982, respectively. No other party sought to comment on our request for information. What follows is a synthesis of the information contained in the Staff's and LILCO's filings.

II. SAI'S ACTIVITIES

SAI has performed work for the NRC Staff in a wide range of areas in recent years. In connection with the Staff's systems interaction program, SAI's Energy Technology & Engineering Group's Accident Consequence Division acted as a subcontractor to Lawrence Livermore National Laboratory in surveying available systems interaction methodologies and in assessing the current state-of-the-art. SAI's principal involvement in this work was through one of its employees who had participated in the WASH-1400 Reactor Safety Study. SAI's work, which was intended to aid the Staff in the development of a methodology for systems interaction studies, resulted in the publication of NUREG/CR-1859, "Systems Interaction: State-of-the-Art Review."

SAI also prepared for and participated in one review meeting of the Indian Point 3 Systems Interaction Study, again as a subcontractor for Lawrence Livermore National Laboratory. SAI's role in this review was as an expert reviewer to provide comments on the study to the NRC Staff. It recommended that the Staff place primary reliance on probabilistic risk assessment for this study; however, the Staff did not adopt SAI's recommendations during this initial phase of this study. The contract between Lawrence Livermore and SAI has been inactive since December, 1981 due to a lack of funding, and SAI does not anticipate that it will participate in the Indian Point Systems Interaction Study in the future.

SAI is still assisting the Staff in reviewing selected light water reactors for systems interactions. SAI has also performed services for the Staff regarding PRAs, including helping to write the National Reliability Evaluation Program (NREP) PRA procedures guide as a subcontractor to Brookhaven National Laboratory and serving as a subcontractor to Sandia Laboratory for a detailed review of the Zion and Indian Point risk studies. Additionally, SAI is currently under consideration to perform several other studies for NRC as either a prime contractor or a principal subcontractor.

SAI's work for LILCO was performed by its Engineering Technology & Engineering Group's Power Engineering Services Division. LILCO's involvement with SAI began in either late 1979 or early 1980, and during 1980 SAI

provided LILCO with information on PRAs in general and SAI's capabilities in particular. SAI was awarded the contract for phases I and II of LILCO's PRA in April, 1981, after competitive bidding.

The Shoreham PRA was performed by a different division of SAI than that which performed SAI's state-of-the-art review of systems interactions as a subcontractor to Lawrence Livermore for the Staff. These divisions report to separate Operations Managers and, at least until recently, were situated in different locations. There was no exchange of technical information between these divisions on their respective studies, and the work done by SAI on each of these projects was done without knowledge of the performance requirements for the other study. LILCO's filing also states that no member of the SAI staff participated in both the Lawrence Livermore Laboratory-sponsored review of Indian Point and the Shoreham PRA.

The parties did not address the propriety of the separation of information and/or SAI staff participation in connection with other systems interaction work which SAI performed, either directly or indirectly, for the NRC Staff.

III. CONFLICTS OF INTEREST

LILCO concludes that no conflict of interest results solely from SAI's performance of work for utilities, particularly LILCO, and SAI's performance of work for the NRC Staff, either directly or as a subcontractor for another consultant. In its view, "[i]t is appropriate for the NRC Staff or its contractor to seek the expert views of one of the handful of preeminent organizations in the field." LILCO believes that the only bearing of SAI's prior systems interaction work for the Staff is whether the testimony of SAI's witness in this proceeding is consistent with the views given Staff by other SAI experts.

The NRC Staff takes a somewhat different approach to reach a conclusion similar to that of LILCO. The Staff recites generally the process which NRC and DOE use to ensure that no conflicts of interest exist in the contracts which these agencies award, and then comments on whether its contracts with SAI are relevant for consideration in this proceeding.

While the Staff does not expressly so state, the contracts which it has awarded to SAI directly have presumably passed muster under the NRC's contracts review process. The Staff does not address what steps are taken to ensure that conflicts of interest are avoided in the award of subcontracts under the contracts which NRC awards to prime contractors. We note that under the NRC's procurement regulations, particularly 44 CFR §§20-1.5410 and 20-1.5404-1(f) (set out as a part of Attachment 1 to Staff's July 23, 1982 filing), NRC's review of its contracts does include such considerations. We believe it would have been helpful for the Staff to have included some comment in its filing either to the effect that the NRC review of

its direct and indirect contracts with SAI had revealed that no conflicts of interest exist, or that certain steps had been taken to either avoid or mitigate the effects of any such potential conflicts. *See generally* Section 170A of the Atomic Energy Act of 1954, as amended, 42 U.S.C. §2210a(b). While the award or denial of Staff contracts is outside the scope of this Board's jurisdiction, we believe such information would have been useful to its consideration of the effects in this proceeding of these contractual contacts.

The Staff and LILCO both seem to agree that the work done for Staff by SAI most directly relevant to this proceeding is the above-described "state-of-the-art" review of PRA methodology which SAI performed as a subcontractor for Lawrence Livermore. As framed by the Staff, "[t]he primary question is what effect, if any, the SAI position that PRA methodology should be employed in conducting systems interactions analyses might have had on the Staff's position in the Shoreham proceeding." The Staff continues, "[t]he issue in the context of a licensing hearing is to determine whether actual biased input has been presented to the Staff and, if so, whether the Staff has relied upon such input." The Staff then concludes that as the Staff has not relied upon LILCO's draft Shoreham PRA (performed by SAI) as a basis for licensing or in formulating its position in this proceeding on the adequacy of LILCO's consideration of potential systems interactions at Shoreham, it does not believe the fact of SAI's PRA work for the Staff under its contract with Lawrence Livermore National Laboratory to be material to this proceeding.

The Staff adopts a similar posture with respect to work done by NUS Inc., another contractor who performed work for the Staff on PRA methodology and who also performed PRA work for both LILCO and the Applicant in the Limerick proceeding.

While the Staff agrees with LILCO that questions of bias on the part of SAI in working for both the Staff and LILCO might properly be directed to SAI witnesses if the Staff had relied on SAI's work, it believes there to be no need for such inquiry in the Shoreham proceeding, as the Staff's decision not to rely on SAI's position is stated to have rendered this matter immaterial.

The Staff's conclusion that its decision not to rely on the work performed for it by SAI renders this matter immaterial also appears to be the basis for its conclusion that it was under no obligation to disclose this relationship to the Board and parties in either this proceeding or in any other proceeding, such as Limerick, in which a similar situation exists. In support of this position, the Staff asks us to "[s]ee generally *Tennessee Valley Authority* (Browns Ferry Nuclear Plant, Units 1, 2 and 3), ALAB-677, 15 NRC 1387 (1982); *Duke Power Co.* (McGuire Nuclear Station, Units 1 and 2), ALAB-143, 6 AEC 623, 625 (1973)," two cases which generally set forth the continuing obligation of parties to a licensing proceeding to apprise the Board and parties of recent developments which are material and relevant to those matters in issue in a proceeding.

We do not believe the “relevance and materiality” standards set forth in those cases to be directly applicable in a situation such as this, however, where what is at issue is a matter of the fundamental fairness of the conduct of parties to a proceeding. Pursuant to 10 CFR §2.718, this Board “has the duty to conduct a fair and impartial hearing under law,” which we believe includes the responsibility to impose upon all parties to a proceeding the obligation to disclose all potential conflicts of interest. We believe that the Staff begs the question when it states that such potential conflicts need not be disclosed due to their lack of materiality, since fundamental fairness clearly requires such disclosure so as to enable the Board to determine the materiality of such information.

In the matter presently before us, we believe that the disclosure of this information on the record has cured any defects in the fairness of this proceeding which may have existed. The Board and all parties had the opportunity to cross-examine either LILCO’s or the Staff’s own witnesses as to bias in this regard after this potential conflict of interest was discovered and raised by the Board, even though neither took advantage of this opportunity. Indeed, in light of obvious disparity between the views of the Staff¹ and the SAI witness² as to the utility of PRAs in determining potential systems interactions and the voluminous testimony we have had from all sides, we do not believe that good cause exists to justify further inquiry into this matter.

¹ See, e.g., NRC Staff Testimony of Themis P. Speis, Walter P. Haas, Marvin W. Hodges, C. E. Rossi, James H. Conran, Sr. and Robert Kirkwood on Safety Classification and Analysis of Structures, Systems and Components, ff. Tr. 6357, at 31-34; Tr. 6407 (Conran).

² See, e.g., Testimony of Edward T. Burns, George F. Dawe, George Garabedian, Pio W. Ianni, Vigin Joksimovich, Robert M. Kasczak, Paul J. McGuire, Paul W. Rigelhaupt and David J. Robare for the Long Island Lighting Company Regarding Suffolk County/Shoreham Opponents Coalition Contention 7B and Shoreham Opponents Coalition Contention 19(b), ff. Tr. 4346, at 80-81.

All parties are directed, however, to continue to apprise this Board as to any potential conflicts of interest which might be later discovered.
IT IS SO ORDERED.

THE ATOMIC SAFETY AND
LICENSING BOARD

Lawrence Brenner, Chairman
ADMINISTRATIVE JUDGE

James H. Carpenter, Member
ADMINISTRATIVE JUDGE

Peter A. Morris, Member
ADMINISTRATIVE JUDGE

Bethesda, Maryland
September 3, 1982

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**John F. Wolf, Chairman
Frank F. Hooper
Gustave A. Linenberger, Jr.**

In the Matter of

**Docket Nos. 50-522
50-523**

**PUGET SOUND POWER AND LIGHT COMPANY, et al.
(Skagit/Hanford Nuclear Power Project,
Units 1 and 2)**

September 3, 1982

The Licensing Board rules on the disposition of two late-filed petitions to intervene in this proceeding, denying the petition filed by the Columbia River Inter-Tribal Fish Commission (CRITFC) for lack of standing and granting the petition filed by the Yakima Indian Nation, subject to the requirement that at least one contention acceptable under 10 CFR §2.714(b) be filed.

RULES OF PRACTICE: STANDING TO INTERVENE

An organization may represent only its own members. *Long Island Lighting Company* (Shoreham Nuclear Power Station, Unit 1), LBP-77-11, 5 NRC 481, 483 (1977). The requirements for standing, injury in fact and an interest "arguably within the zone of interest" protected by the statute, must be fulfilled by the organization itself through its own membership. *Portland General Electric Company, et al.* (Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610, 613 (1976).

RULES OF PRACTICE: NON-TIMELY INTERVENTION PETITIONS

An untimely petition to intervene may be granted if it is found that a balancing of the five factors set forth in 10 CFR §2.714(a)(1) favors intervention. Some weight may be attached to the fact that the lateness, though not justified, is not extreme and will not delay the proceeding. *Duke Power Company* (Amendment to Materials License SNM-1773 — Transportation of Spent Fuel from Oconee Nuclear Station for Storage at McGuire Nuclear Station), ALAB-528, 9 NRC 146, 150 (1979).

RULES OF PRACTICE: CONTENTION REQUIREMENT FOR INTERVENTION

10 CFR §2.714(b) requires a petitioner for intervention to file a supplement containing at least one admissible contention. *Cincinnati Gas and Electric Company, et al.* (William H. Zimmer Nuclear Station), LBP-80-14, 11 NRC 570, 571 (1980).

MEMORANDUM AND ORDER IN RESPONSE TO PETITIONS TO INTERVENE BY COLUMBIA RIVER INTER-TRIBAL FISH COMMISSION AND YAKIMA INDIAN NATION

On February 5, 1982, the U.S. Nuclear Regulatory Commission (NRC) published in the *Federal Register* a notice of opportunity for a hearing on the amended application for a construction permit for the Skagit/Hanford Nuclear Project. 47 *Fed. Reg.* 5554 (1982). The notice permitted the filing of petitions to intervene in the proceeding, and established March 8, 1982 as the deadline for filing such petitions. *Id.* at 5555.

Both the Columbia River Inter-Tribal Fish Commission (CRITFC) and the Yakima Indian Nation filed untimely Petitions to Intervene.¹ The Applicants filed separate responses, opposing the petitions of CRITFC and the Yakima Indian Tribe.² Applicants alleged that neither Petitioner showed good cause for untimely filing under 10 CFR §2.714. Staff filed a response which favored the granting of both petitions.³

¹ CRITFC filed a Petition to Intervene dated May 5, 1982. The Yakima Indian Nation filed a Petition to Intervene dated May 10, 1982.

² Applicants' Response in Opposition to Untimely Petition to Intervene by Columbia River Inter-Tribal Fish Commission, May 19, 1982; Applicants' Response In Opposition to Untimely Petition to Intervene by Yakima Indian Nation, May 25, 1982.

³ NRC Staff Response to Untimely Petitions to Intervene filed by the Columbia River Inter-Tribal Fish Commission and the Yakima Indian Nation, May 25, 1982.

There are two questions before us:

1. Whether CRITFC has standing to intervene in this proceeding.
2. Whether the Yakima Indian Nation has satisfied the standards for late intervention set forth in 10 CFR §2.714.

I. CRITFC STANDING TO INTERVENE

Whether the interest alleged is sufficient to grant the petition for intervention as a matter of right is governed by judicial concepts of standing. *Portland General Electric Company, et al.* (Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610, 613-14 (1976). Two tests must be satisfied to acquire standing. First, petitioner must allege "injury in fact": that some injury has occurred or will probably result from the action involved. *Id.*, at 613. Second, petitioner must allege an interest "arguably within the zone of interest" protected by the statute. *Ibid.*; *Warth v. Selden*, 422 U.S. 490 (1975); *Sierra Club v. Morton*, 405 U.S. 727 (1972); *Consumers Power Company* (Palisades Nuclear Plant) LBP-79-20, 10 NRC 108, 113 (1979).

The allegation of a "special interest" is insufficient to establish standing without a showing of particular harm. *Sierra Club v. Morton*, 405 U.S. at 739, 740. An organization does not have independent standing to intervene in a licensing proceeding merely because it asserts an interest in the litigation. *Allied General Nuclear Services, et al.* (Barnwell Fuel Receiving and Storage Station), ALAB-328, 3 NRC 420, 422 (1976).

In its original Petition to Intervene, dated May 10, 1982, CRITFC alleged that it consists of the fish and wildlife committees of four Columbia River tribal governments: Confederated Tribes of the Warm Springs Indian Reservation; Confederated Tribes and Bands of the Yakima Indian Nation; Nez Perce Tribe of Idaho; and the Confederated Tribes of the Umatilla Indian Reservation. Petition to Intervene at 1. On July 2, 1982, the Licensing Board issued a Memorandum and Order in Response to Petition to Intervene (1) by Columbia River Inter-Tribal Fish Commission; (2) by Confederated Tribes and Bands of the Yakima Indian Nation. This Order cited several technical deficiencies in the Petition to Intervene filed by CRITFC. Among the difficulties noted was the lack of cited authority of CRITFC to represent the four tribal governments, one of which — the Confederated Tribes and Bands of the Yakima Indian Nation — had filed a separate Petition to Intervene.

On July 16, 1982, CRITFC filed a response to the Licensing Board's Order.⁴ The response contained an attachment entitled "Clarification That the Columbia

⁴ Response of the Columbia River Inter-Tribal Fish Commission to July 2, 1982 Memorandum and Order of the Atomic Safety and Licensing Board, July 16, 1982.

River Inter-Tribal Fish Commission Does Not Represent the Columbia River Treaty Tribes." The document explained that CRITFC does not represent the four Indian tribes. Response at Attachment 1. It is, rather, an independent body which "assists the four Fish and Wildlife Committees in their coordinated programs and actions to protect, promote, and enhance the fish, wildlife and water resources secured by treaties with the United States." *Ibid.* Based on this response, Applicants allege that CRITFC lacks standing to intervene in this proceeding.⁵

Absent express authorization, an organization may represent only its own members in a licensing proceeding. *Long Island Lighting Company* (Shoreham Nuclear Power Station, Unit 1), LBP-77-11, 5 NRC 481, 483 (1977). Thus, CRITFC may not derive its standing to intervene from the interest of the Columbia River treaty tribes. It must, in itself and through its own membership, fulfill the requirements for standing set forth above: *i.e.*, injury in fact and an interest "arguably within the zone of interest" protected by the statute. *Pebble Springs* at 613, *supra*. Since CRITFC has not fulfilled these criteria, it has not established that it has standing as an organization to intervene in this proceeding. It acknowledges that it does not represent the Columbia River Treaty Tribes, and does not assert that it is authorized to represent the treaty rights of the tribes. This Board concludes that CRITFC simply has an academic interest in protecting the tribal treaty rights. Accordingly, CRITFC has not shown sufficient justification to demonstrate standing to intervene in this proceeding.

II. LATE-FILED PETITION TO INTERVENE BY YAKIMA INDIAN NATION

The Yakima Indian Nation filed a Petition to Intervene in this proceeding on May 10, 1982, two months after the deadline of March 8, 1982, set forth in 47 *Fed. Reg.* 5554 (1982). Applicants and Staff responded to the Petition on May 25, 1982. Applicants opposed the granting of the Petition; Staff favored it.

An untimely petition to intervene may be granted if it is found that a balancing of the five factors set forth in 10 CFR 2.714(a)(1) favors intervention.

As applied here, the various factors of 10 CFR 2.714(a)(1) on their face do not appear to justify admissibility. However, this consideration must be weighed against the Petitioner's strong interest in the proceeding under 10 CFR 2.714(d). This interest would have been sufficient to grant standing had the petition been timely filed. Applicants, who oppose the granting of the petition, specifically state that they have no objection to the standing of the Yakima Indians to intervene in this proceeding. Applicants' Response at 3. It is also permissible to consider the

⁵ Applicants' response in opposition to Columbia River Inter-Tribal Fish Commission's Motion for Admission of Second Supplement to Petition to Intervene, July 30, 1982, pp. 3-6.

fact that the Petition was filed only two months late, and will not substantially delay the start of the proceeding. The Appeal Board has said, regarding a petition to intervene filed six months after the deadline had elapsed, that some weight may be attached to the fact that lateness, though not justified, is not extreme. *Duke Power Company* (Amendment to Materials License SNM-1773 — Transportation of Spent Fuel from Oconee Nuclear Station for Storage at McGuire Nuclear Station), ALAB-528, 9 NRC 146, 150 (1979).

The Yakima Indian Nation has a strong interest in this proceeding. The lateness of the Petition to Intervene is not egregious, and will not cause substantial delay to the present parties. These considerations outweigh the fact that the balance of five factors required under 10 CFR 2.714(a)(1) tips slightly against the Petitioner.

Although the Yakima Indian Nation has identified its interest in this proceeding, it has not put forth any admissible contentions. 10 CFR 2.714(b) requires a petitioner for intervention to file a supplement containing at least one acceptable contention. *Cincinnati Gas and Electric Company, et al.* (William H. Zimmer Nuclear Station), LBP-80-14, 11 NRC 570, 571 (1980).

Accordingly, for the reasons set forth above, it is
ORDERED

1. That the Petition to Intervene by CRITFC is denied; and
2. That the Petition to Intervene by the Yakima Indian Nation is granted subject to the requirement that at least one acceptable contention be filed on or before October 1, 1982.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

John F. Wolf, Chairman
ADMINISTRATIVE JUDGE

Frank F. Hooper
ADMINISTRATIVE JUDGE

Gustave A. Linenberger, Jr.
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,
this 3rd day of September, 1982.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Lawrence Brenner, Chairman
Dr. James H. Carpenter
Dr. Peter A. Morris**

In the Matter of

Docket No. 50-322-OL

**LONG ISLAND LIGHTING COMPANY
(Shoreham Nuclear Power Station,
Unit 1)**

September 7, 1982

The Licensing Board issues its Supplemental Prehearing Conference Order ruling on intervenors' "Phase One Consolidated Emergency Planning Contentions," which primarily relates to Applicant's onsite emergency planning efforts.

**LICENSING BOARDS: DISCRETION IN MANAGING
PROCEEDINGS; SANCTIONS**

Pursuant to 10 CFR §2.707, a licensing board is empowered on the failure of a party to comply with a prehearing conference order to "make such orders in regard to the failure as are just." Based upon the Appeal Board's ruling in *Commonwealth Edison Company* (Byron Nuclear Power Station, Units 1 and 2), ALAB-678, 15 NRC 1400 (1982) the out-of-hand dismissal of intervenors' proposed contentions solely for failing to either further particularize certain contentions or to pursue settlement negotiations is unwarranted. A more appropriate course of action in such a case is to simply rule on intervenors' proposed contentions as they now stand, dismissing those which lack adequate bases and specificity.

RULES OF PRACTICE: ADMISSIBILITY OF CONTENTION

Pursuant to 10 CFR §2.714, an intervenor must set forth those matters which it seeks to litigate “with reasonable basis and specificity.” This power of the Commission to require that intervenors make such a threshold showing prior to the admission of a contention has been upheld by the Federal Courts. See *BPI v. Atomic Energy Commission*, 502 F.2d 424, 428-429 (D.C. Cir. 1973).

RULES OF PRACTICE: ADMISSIBILITY OF CONTENTION

A contention alleging an entire emergency response plan to be inadequate, in that it fails to consider certain matters, is required pursuant to 10 CFR §2.714 to specify the way in which identified portions of the plan are alleged to be inadequate. In advancing such a contention, it is intervenors’ obligation to assert how the identified portions of an emergency plan are rendered inadequate by its failure to consider such matters.

EMERGENCY PLANNING: MEDICAL SERVICES; CONTAMINATED INJURED

Pursuant to 10 CFR §50.47(b)(12), emergency response plans for nuclear power reactors must include arrangements for “contaminated injured” individuals. As interpreted by the Appeal Board in *Southern California Edison Company, et al.* (San Onofre Nuclear Generating Station, Units 2 and 3), ALAB-680, 16 NRC 127, 137 (1982) “contaminated injured” is a distinct category of injury, encompassing potential patients whose traumatic (*i.e.*, physical) injuries are complicated by radioactive contamination. People who suffer radiation injury, without accompanying traumatic injury, are unlikely to need *emergency treatment* because the clinical course of radiation injury unfolds over time and is seldom, if ever, life-threatening. Thus, for a serious nuclear accident to result in the hospitalization of large numbers of people, not only must an already unlikely accident be severe, but also the emergency response to protect the public must be ineffectual. But see *Southern California Edison Company, et al.* (San Onofre Nuclear Generating Station, Units 2 and 3), CLI-82-27, 16 NRC 883 (1982).

SUPPLEMENTAL PREHEARING CONFERENCE ORDER

(Phase I — Emergency Planning)

BACKGROUND

On June 22, 1982, intervenors Suffolk County (County), the Shoreham Opponents Coalition (SOC) and the North Shore Committee Against Nuclear and Thermal Pollution (NSC) filed with the Board the first version of their emergency planning contentions based on LILCO's plan. Pursuant to our direction, this was a consolidated filing which represented the joint efforts of intervenors and which had been drafted with the benefit of consultation with both LILCO and the NRC Staff. Also pursuant to our direction, LILCO and the Staff filed their objections to these contentions on the same date the contentions were themselves filed.

We did not rule on the admissibility of intervenors' contentions at that time, choosing instead to permit intervenors to revise, consolidate and better particularize their contentions in light of those comments which they had received. Thereafter, on July 6, 1982, intervenors filed their "First Amended Consolidated Emergency Planning Contentions." These contentions were also drafted with the benefit of consultation with both LILCO and the NRC Staff so as to permit those parties to respond promptly to intervenors' filing. On July 20, 1982, a day-long prehearing conference was held to discuss this version of intervenors' contentions, as well as several subsidiary matters.

On July 27, 1982, the Board issued a prehearing conference order ruling on intervenors' July 6, 1982 statement of contentions. Pursuant to that order, certain contentions were admitted, one was wholly denied admission, and consideration of others was deemed more appropriate during Phase II of our emergency planning proceedings, which will primarily relate to Suffolk County's emergency planning efforts. We deferred ruling at that time on certain matters which we believed to be "susceptible to settlement"¹ and also requested that some of the contentions be rewritten and further particularized so as to correct certain deficiencies observed

¹ Our July 27, 1982 order stated:

"Matters deemed "susceptible to settlement" are those proposed contentions which the Board believes should be subject to speedy resolution based upon the exchange of certain readily ascertainable information and/or negotiation among the parties. These contentions are neither being admitted nor denied admission at this time; they are being held in abeyance based upon the Board's belief that the results of informal negotiation on these matters would be preferable to their formal consideration by us. We have indicated which contentions in this category should be settled as part of Phase I, and which ones can be settled on a more extended schedule." (Order at 5.)

The Staff's August 24, 1982 "Objections to Phase One Consolidated Emergency Planning Contentions" appears to erroneously conclude that those matters described in our July 27 order as being "susceptible to settlement" were admitted by that order.

by the Board. The intervenors were directed to file revised consolidated contentions on August 20, 1982. Draft copies of these revised contentions were to be provided to all parties on an informal basis some days prior to this time so as to aid them in preparing their responses, which were done by August 24, 1982.

Subsequently, in response to intervenors' petition for reconsideration, the Board reversed its earlier ruling wholly denying admission of the one contention so treated and permitted intervenors an opportunity to provide further particularization of this contention as a part of their August 20 filing.

Pursuant to our July 27 order, intervenors timely filed their "Phase One Consolidated Emergency Planning Contentions" and LILCO timely filed its objections to intervenors' contentions on August 24. The NRC Staff did not file its response until the following day.²

As part of its objections, LILCO notes that this is the third formulation of intervenors' contentions received by the Board and requests that we dismiss contentions lacking adequate bases or particularization at this time, rather than permitting intervenors to submit these contentions a fourth time. In support of this proposition, LILCO asserts that intervenors have done little toward refining the contentions in the last two months, either in providing the additional particularity and bases requested by our July 27, 1982 order, or in making any substantive attempt to respond to LILCO's settlement offers.

LILCO argues that in neither adequately particularizing the contentions nor engaging in settlement talks in response to our prehearing conference order, intervenors have not met their obligations to this Board. Relying on *Commonwealth Edison Company* (Byron Nuclear Power Station, Units 1 and 2), ALAB-678, 16 NRC 1400 (1982), LILCO asserts that the appropriate sanction for intervenors' failure to adequately respond to the Board's order is to deny admission of their contentions.

In its August 30, 1982 response to LILCO's and the NRC Staff's objections, which was permitted by the Board, the County takes issue with LILCO's suggestion that the County has been dilatory in pursuing settlement, noting that all of its emergency planning attorneys were involved in taking depositions during the period in which LILCO was proposing settlement agreements. The County states that LILCO was well aware of how its attorneys were otherwise occupied, and questions LILCO's motives, first, in writing these settlement proposals which it knew could not be acted upon, and second, in moving to strike intervenors' contentions on the basis of their asserted refusal to negotiate. The County does not

² As we have previously noted, filings requested by the Board to be filed by a certain date should be received by the Board by that date. If the requested filing date falls on a day when the Board is at hearings, the pleading should be in the Board's hands at the hearing location by that date. Otherwise, filings should be received at the Board's Bethesda offices on the date requested. In this regard, the parties are requested to make every effort to serve such filings by 3:00 pm on the scheduled date so as to enable the Board to consider them promptly.

address that portion of LILCO's objections which suggests that intervenors have not adequately responded to this Board's request that certain contentions be further particularized.

Even if we were to accept everything which LILCO has asserted as being true, we do not believe *Byron* to require that we dismiss intervenors' contentions. Indeed, we believe both the facts and the equities of this proceeding to be distinguishable from those in the *Byron* decision.

In *Byron*, the Appeal Board reversed a licensing board ruling dismissing all of an intervenors' contentions as a sanction for its total failure to comply with a discovery order, concluding that while the dismissal of contentions can be an appropriate sanction for the failure of a party to comply with a Board order, dismissal of all of the intervenor's contentions was too harsh a sanction in the circumstances of that proceeding. We do not believe that the intervenors' conduct in this proceeding in failing to further particularize certain contentions or even, *arguendo*, to pursue settlement negotiations, when taken by itself, warrants the out-of-hand dismissal of intervenors' proposed contentions. We find a sharp contrast between an intervenor's refusal to provide information requested by another party on discovery, even after a licensing board order compelling its disclosure, and the asserted failure of intervenors in this case to take advantage of an additional opportunity to narrow and particularize their contentions.

Pursuant to 10 CFR §2.707, this Board is empowered, on the failure of a party to comply with any prehearing conference order, to "make such orders in regard to the failure as are just." We believe the just result in this case, where intervenors have not fully availed themselves of an opportunity to further particularize their contentions, is to simply rule on intervenors' contentions as they now stand, dismissing those proposed contentions which lack adequate bases and specificity.

The rulings which follow therefore reflect the Board's final rulings on the admissibility of Phase I contentions. Contentions which are rejected are dismissed with prejudice. Comments included in the parties' August 30, 1982 filings are addressed insofar as they raise matters not addressed in their previous filings.

We continue to note the possibility that we may defer some aspects of the litigation of admitted Phase I contentions to Phase II after receiving the testimony on Phase II Contentions. (July 27 Order, at 22.)

EP1: LILCO's Failure to Account for the Specific Conditions Existing on Long Island

Not admissible.

Our July 27 order denied admission of this contention because it lacked particularization and was overly broad. Thereafter, in response to intervenors' petition for reconsideration, we orally reversed this ruling and ordered that

intervenors further particularize this contention as a part of their August 20 filing. Tr. 8902-8904.

LILCO objects to this revised contention as being overly broad and lacking particularity and bases. LILCO's specific objections to specific portions of EP1 are discussed below.

The Staff also objects to this revised contention as being overly broad and lacking particularization. Moreover, the Staff objects to this contention because it believes that intervenors seek to litigate the social and behavioral characteristics of the local population which allegedly may present some impediment to effective emergency planning, without detailing with any basis or particularity how or why the range of planning standards provided by the regulations, as addressed in LILCO's emergency plan, do not adequately consider this matter.

Suffolk County, in its August 30, 1982 response to LILCO's and the Staff's objections, asserts that the breadth of EP1 mirrors the breadth of the flaws in LILCO's plan. It states that it is not possible to cite a particular page or paragraph which is the "smoking gun" in LILCO's plan, since LILCO's error is more in what it left out of its plan than what it put in. The County also asserts that EP1 has defined with particularity the local conditions that LILCO has ignored and explains the impact of their absence upon emergency planning for Shoreham. In its opinion, "[a]ny further particularity would change EP1 from a contention to a detailed brief, which is not required under any rules of pleading."

Intervenors' contention EP1 is set forth below in its entirety. For clarity of discussion, the Board has dénominated the paragraphs with the letters A, B, C and D. The matters set forth in the third paragraph (Paragraph "C") are numbered consecutively (1)-(7). Intervenors' original numbering of the local conditions which LILCO is alleged to have not taken into account (Paragraph "D") has been retained.

*EP1: LILCO's Failure to Account for the Specific
Conditions Existing on Long Island*

(A) The Board should rule that LILCO's plan as a whole is inadequate under 10 CFR 50.47(a)(1), (a)(2) and (b), in that it does not provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency, nor does the plan provide reasonable assurance that it is capable of being implemented.

(B) The basis for this contention is that the LILCO emergency plan cannot "provide reasonable assurance that adequate protective measures *can and will be taken*" and cannot provide reasonable assurance that it is "capable of being implemented" unless the plan has accounted for local conditions in the vicinity which directly affect whether adequate protective measures "can and will be taken" and whether the plan is "capable of being implemented."

(C) In developing its emergency plan, (1) LILCO has not determined the types and sizes of radiological releases to be expected from possible accidents at the Shoreham plant; (2) it has not determined the physical dispersion of such radiological releases on Long Island and proximate areas; (3) it has not determined the populations at risk from such radiological releases; (4) it has not determined the likely reactions of such populations to notification that they are at risk; (5) it has not determined what protective actions should be recommended from such notified populations; (6) it has not determined who should give such notification and how that should be done; and (7) it has not determined what type of education is required for such populations (and for Long Island populations not significantly at risk from radiation) and when and how to provide that education.

(D) Specifically, the local conditions which LILCO has not taken into account are the following:

1. Local demographic, socio-economic and social and behavioral characteristics of the population affected by a radiological emergency, including:
 - i. Where people live;
 - ii. Where people work;
 - iii. Whether the officials or organizations which will inform Long Island residents of an accident at the Shoreham plant are credible sources of information;
 - iv. The educational level and nuclear-related knowledge and predispositions of the residents of Long Island, so as to tailor education and notification programs to their needs;
 - v. How the residents of Long Island will respond to notification of a radiological emergency, particularly whether they will obey instructions to take a specific protective action or whether they will attempt to flee and, if so, how families separated by work or school will seek to unite or depart individually;
 - vi. How the location and perception of location of the residents in Long Island (including the East End) would affect their reactions to a radiological emergency;
 - vii. Whether role conflicts will reduce the size and reliability of emergency workers who would be required during an accident at the Shoreham plant.
2. What physical access and ease of access people actually have to roads, bridges, transportation facilities and other means of egress.
3. The types of materials of which local houses and other buildings are constructed and the extent to which those materials would affect the health consequences of a radioactive release in the event that sheltering is the recommended protective action.

In paragraphs (A) and (B), intervenors track the general language of 10 CFR §50.47(a)(1) and (2) in alleging that LILCO's overall plan is inadequate, in that it does not provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency and in that it does not provide reasonable assurance that it is capable of being implemented. The basis for intervenors' contention is stated to be that the plan cannot provide these assurances unless the plan has accounted for certain local conditions in the vicinity. The specific local conditions which LILCO is alleged to have not taken account of are set forth in paragraph (D). Paragraph (C) sets forth certain matters which it is alleged that LILCO has not determined in developing its emergency plan.

With respect to the local conditions enumerated in paragraph (D), we note that intervenors allege that LILCO's overall plan is inadequate for having not taken account of these local conditions; not that LILCO's plan has failed to take account of these local conditions in formulating specific referenced portions of its plan, or even that LILCO's plan is inadequate in that these conditions must be considered in making the determinations which paragraph (C) alleges have not been made.

Accordingly, intervenors appear to desire to litigate each and every aspect of LILCO's plan. Such an overly broad contention surely fails to state any basis to believe that *every* aspect to LILCO's plan is inadequate, even if we were to assume, *arguendo*, that LILCO never considered any of the local conditions set forth in paragraph (D) in developing its plan. Nor do we believe that a contention that would simply seek to litigate every paragraph of LILCO's plan, *plus* certain determinations which are alleged to not have been made in the formulation of that plan, can be stated to provide adequate particularization. Such a contention runs afoul of the requirements of 10 CFR §2.714 that intervenors set forth those matters which they seek to litigate "with reasonable basis and specificity." This power of the Commission to require that intervenors make such a threshold showing prior to the admission of a contention has been upheld by the Federal Courts. *See BPI v. Atomic Energy Commission*, 502 F.2d 424, 428-429 (D.C. Cir. 1973). Intervenors have not met this standard here.

We agree with the intervenors' assertion that the Commission's rules of practice do not require that a contention be in the form of a detailed brief. We believe, however, that a contention alleging an entire plan to be inadequate, in that it fails to consider certain matters, should be required to specify in some way each portion of the plan alleged to be inadequate. For example, this Board finds it unclear how LILCO's plans for post-accident monitoring of the ingestion exposure pathway would be changed by the "local conditions" referenced in the intervenors' contention. We are not saying this is impossible, but without an adequately particularized contention, setting forth how the "local conditions" referenced in EP1 are alleged to affect every aspect of LILCO's plan, we are left to speculate how LILCO's alleged failure to consider these local factors is supposed to render each aspect of its plan inadequate. If intervenors assert that they know how each aspect of the

emergency plan is made inadequate by LILCO's failure to consider certain local conditions, it is their obligation to put these matters forward for litigation, not hold back and assert that to require such information would impose a burdensome pleading requirement. This lack of specificity is exacerbated by the fact that paragraph "D" is a list of broad *categories* of local conditions, not specific conditions alleged to exist locally.

We believe that intervenors should not be given yet another opportunity to particularize this contention. As we noted in the preamble to this order, this is intervenors' third attempt to state properly particularized contentions. Our July 27, 1982 order denied admission to their July 6, 1982 version of this contention as being overly broad and lacking in basis and specificity. In response to intervenors' motion for reconsideration, which set forth a new version of EP1 which is almost identical to the version now before us, we permitted intervenors the opportunity to file a revised version of EP1 as a part of their August 20, 1982 filing. We indicated at that time, however, that while we believed the version of EP1 included in their motion for reconsideration to be a step in the right direction, we still believed this contention to require additional particularization. In light of all of the opportunities which intervenors have had to state a litigable version of this contention, and their continuing failure to do so, we do not believe it would prove fruitful to permit intervenors yet another opportunity to particularize this contention.

We address the Staff's and LILCO's specific objections to specific portions of paragraphs (C) and (D) below.

(C) Matters Which LILCO Is Alleged to Have Not Determined

LILCO objects to certain of the matters set forth in this paragraph as being redundant to other contentions and/or as being Phase II matters.

We believe that items (1), types and sizes of expected radiological releases, (2), physical dispersion of such releases, (3), populations at risk, and (5), protective action recommendations, are all matters which will be heard with respect to either EP5, Protective Action Recommendations, or EP23, Accident Assessment and Dose Assessment Models. Accordingly, we find these matters redundant and inadmissible.

Items (4), likely reactions of the population to notification, and (7), public education, are matters more appropriate for litigation during Phase II of these proceedings and thus inadmissible at this time.

We believe that portion of item (6) relating to who should notify the public lacks bases, as it is the responsibility of State and local government organizations to make such a notification, not LILCO. NUREG-0654, Item II.E.5. Insofar as that portion of Item (6) relating to how the public will be notified refers to the prompt notification system, we believe it to be redundant to EP2. If it refers to the systems by which such information is to be disseminated to the public, this matter is the

responsibility of State and local governments, and is therefore without basis. NUREG-0654, Item II.E.5. As we do not know what is being challenged by this portion of Item (6), we also believe it to lack particularity.

(D) Local Conditions

While it would seem that consideration of each of the broad categories of local conditions enumerated in paragraphs (D)(1) and (2) might be appropriate if they both specified the particular local circumstances and if they were tied to particular aspects of LILCO's plan which are alleged to be inadequate, no attempt has been made in this contention to do this. As we cannot litigate such matters in a vacuum, intervenors' failure to relate particular local conditions to alleged deficiencies in LILCO's plan precludes our finding these matters admissible. Depending on what is intended by the contention, it might be appropriate to consider such subjects in a contention, with requisite specificity and bases, during Phase II.

As to paragraph (D)(3), we note that it is word-for-word the same as the paragraph numbered (5) in intervenors' July 6 version of EP1. As to this paragraph, we commented in our July 27, 1982 order that although we believed this paragraph to be better particularized than other portions of this contention, it was redundant to old EP5(D)(2), which we held inadmissible during Phase I. Upon re-examination of this issue, we believe this matter to also be redundant to the first sentence of the present EP5, insofar as it relates to the bases for the choice of recommended protective actions. This topic may therefore be litigated as part of EP5 during Phase I to the extent relevant to the bases for recommending sheltering as a protective action.

Accordingly, EP1 is denied admission in its entirety.

EP2: Prompt Notification System

(A) Siren coverage constricted by bad weather

Admitted in July 27, 1982 order.

(B) Back-up power for system

Admitted in July 27, 1982 order.

(C) Gaps in siren coverage

Formerly numbered EP2(D). Admitted in July 27, 1982 order.

(D) Notification of large facilities by tone alert

Not admitted.

In our July 27, 1982 order, we stated that we believed this contention, then numbered EP2(E), to be susceptible to settlement. We requested at that time that the parties conduct whatever investigation and informal exchanges of information necessary for them to narrow or resolve this matter as part of Phase I. The wording of this contention remains unchanged.

LILCO states that the County has made no effort to settle or narrow this contention. It objects to its admission as lacking bases and particularity. We agree. We also agree with Suffolk County's statement in its August 30 response that requiring the County to list in its contention every facility which it alleges will be notified by tone alert would serve no purpose.

We believe that this contention offers no bases for its apparent conclusion that large facilities in general do not possess adequate in-house paging or alerting capabilities and will not agree to bear notification responsibilities of their inhabitants in the event of an emergency at Shoreham requiring such notification. We further believe that we have given intervenors ample time to particularize at which, if any, of the 126 large facilities referenced in their contention this situation exists. If, during Phase II, intervenors can identify a specific defect which exists in this secondary method of public notification of a particular facility, we will litigate such matters if stated with reasonable bases and specificity. We will not try to litigate a contention so unfocused as this one. The parties should attempt to resolve this matter through negotiation.

(E) Verification of tone alert system operability

Not admitted.

We stated in our July 27, 1982 order that we believed this contention, then numbered EP2(F), to be susceptible to settlement. We made this ruling based upon the statement made by Suffolk County's counsel that LILCO had offered to test the tone alert system on a weekly basis, which he believed might moot this issue. (Tr. 7302.) LILCO states that the County has not discussed settlement or narrowing this issue since our order. The contention's wording remains unchanged.

In light of the comment made on the record by Suffolk County's counsel, it is unclear to us what specific issues Suffolk County still wishes to litigate, or if any basis for the intervenors' concerns still exists. We, therefore, deny this contention and direct that the parties attempt to resolve this matter through negotiation. We would not entertain a contention on this issue during Phase II of these proceedings unless it reflects specific reasons why LILCO's proposal will not, as Counsel for the County earlier indicated it might, moot this issue.

EP3: Medical and Public Health Support

(A) *Failure to provide for adequate medical services*

(1) and (4) not admitted.

(2) and (3) admitted.

Our July 27, 1982 order concluded that this contention was not admissible as written, as we believed at least portions of this subpart to be susceptible to considerable specification, narrowing and factual resolution. We further requested that intervenors consider whether portions of this contention continue to be viable in light of the Appeal Board's July 16, 1982 decision in *Southern California Edison Company, et al.* (San Onofre Nuclear Generating Station, Units 2 and 3), ALAB-680, 16 NRC 127, 135-39.

The preamble to this subpart of intervenors' August 20, 1982 filing of contentions was slightly reworded, now including references to LILCO's plan and changing what were references to "contaminated" individuals to "contaminated injured" individuals. The latter change was presumably prompted by the Appeal Board's *San Onofre* decision. A new subsection (1) has been added to this subpart. Original subsections (1)-(3) have been renumbered (2)-(4) and only slightly reworded.

LILCO and the Staff object to subsections (1) and (4), which refer to the alleged inability of Central Suffolk Hospital to accommodate the "large number of individuals" who are "likely" to require treatment in the event of a radiological emergency at Shoreham, as lacking bases and specificity and as being in conflict with the Appeal Board's *San Onofre* opinion. LILCO also objects to new subsection (1) as being redundant to subsection (4).

Pursuant to 10 CFR §50.47(b)(12), emergency response plans for nuclear power reactors must include arrangements for medical services for "contaminated injured" individuals. As interpreted by the Appeal Board in *San Onofre*:

On its face, the regulation requires arrangements for medical services only for "contaminated injured" individuals, not for members of the general public who may have suffered radiation exposure or injury in a nuclear accident. The distinction between the two classes of people is not inadvertent. It is based upon a judgment as to their anticipated needs for emergency treatment. . . .

"Contaminated injured" is a distinct category encompassing potential patients whose traumatic (*i.e.*, physical) injuries are complicated by radioactive contamination (16 NRC 136-37) (footnote omitted).

The Appeal Board also held that people who suffer radiation injury, without accompanying traumatic injury, are unlikely to need *emergency treatment* because the clinical course of radiation injury unfolds over time and is seldom, if ever, life-threatening (*id.* at 137).

Thus, for a serious nuclear accident to result in the hospitalization of large numbers of people, not only must an already unlikely accident be severe, but also the emergency response to protect the public must be ineffectual. (*Id.* at 138) (footnote omitted).

The Appeal Board concluded that even then, hospitalization of the radiation injured would not be an emergency matter (*id.* at 138).

In subsection (1) of contention EP3(A), intervenors appear to attempt to frame a contention which addresses the standards of *San Onofre* for requiring consideration of the hospitalization of radiation injured persons. We do not believe this contention to be redundant to EP3(A)(4), as LILCO alleged, as that contention addresses "contaminated injured" persons. Intervenors' contention provides no bases, however, for their chain of conclusions that LILCO's plan would result in: (1) "an emergency response so ineffectual," that (2) "hundreds of thousands of people would be gridlocked in traffic jams for hours," resulting, (3) in the case of a "severe" radiological accident, in radiation injury to "more persons than Central Suffolk Hospital can accommodate." Accordingly, EP3(A)(1) is not admissible.

EP3(A)(4) also lacks bases and specificity as intervenors' contention does not state any reason for its conclusion that "many contaminated injured persons . . . are likely to require treatment in the event of a radiological emergency." Indeed the *San Onofre* decision held that on that record, "relatively few people [1 to 25] are expected to be both contaminated and traumatically injured in a nuclear-accident" (*id.* at 137). This contention does not provide us with any basis for concluding that a nuclear accident at Shoreham would result in more contaminated injured persons than Central Suffolk County Hospital can accommodate. Therefore, EP3(A)(4) is not admissible.

LILCO also objects to subsections (2) and (3) as lacking both bases and particularity and because subsection (3) refers to "contaminated individuals," not "contaminated injured individuals." We believe both of these contentions to provide adequate bases and particularity. They are therefore admitted. EP3(A)(3) is amended to refer to "contaminated injured individuals." We believe, however, that these contentions may be susceptible to settlement before the litigation of Phase I issues.

(B) *Transportation of contaminated injured individuals — traffic congestion*

This contention was admitted by our July 27, 1982 order. At that time, we instructed intervenors to consider consolidating this contention with EP(6)(B) and EP(9)(D). We also reserved the possibility that this contention might be heard during Phase II. Intervenors chose not to consolidate this contention. However, they did amend it by updating their reference to LILCO's current revision of its

emergency plan. Intervenors also reworded this contention, which had previously referred to the "conveyance of contaminated individuals," to refer to the "conveyance of those persons who would require hospitalization for radiation injury and/or of contaminated injured individuals."

LILCO objects to intervenors' amendment of this contention and argues that it should be filed for litigation as originally worded. LILCO further asserts that this contention should be consolidated with original contentions EP6(B) and EP9(D), and that these matters should be heard during Phase I.

In light of the *San Onofre* decision discussed above, we are amending the wording of intervenors' contention EP3(B) as originally admitted to refer to the "conveyance of contaminated injured individuals," and omitting intervenors' new language discussing radiation injured individuals. We are also permitting intervenors' update of its reference to LILCO's plan.

We note that, in response to this Board's July 27, 1982 order for consolidation, intervenors have apparently dropped old contention EP9(D), recognizing it to be redundant to EP6(D). We will not order that EP3(B) be consolidated with EP6(B); however, we do direct that these two contentions be tried in the same time frame during Phase I.

(C) Lack of up-to-date agreements for emergency services

Not admitted.

In our July 27, 1982 order, we described the existence of up-to-date agreements with off-site support organizations as being a readily ascertainable fact which we believed proper for stipulation or negotiation as a part of Phase I. We further directed that this "susceptible to settlement" matter be consolidated with similar contentions regarding agreements with support organizations. In response to our order, intervenors consolidated old EP(3)(C) with old EP6(C).

LILCO objects to the admission of this contention as lacking adequate particularization. We agree, and find that portions of the contention also lack bases.

While we still believe the existence or non-existence of such contracts to be a readily ascertainable fact, we must admit that we cannot discern from intervenors' contention whether intervenors, by their allegations of the lack of "up-to-date agreements" are seeking to allege that such contracts have expired, have been repudiated, or now contain factual inaccuracies or some other defect making them invalid. Nor does intervenors' assertion that the agreements with Wading River Fire Department and Central Suffolk Hospital "do not provide reasonable assurance that those organizations have the capacity to deliver and will deliver necessary medical services in the event of a radiological emergency" apprise this Board whether intervenors seek to litigate the lack of needed equipment, personnel or training, problems with the availability of equipment, personnel or other resources

for which no bases are presented, or simply that the agreements themselves are lacking in detail. Additionally, intervenors do not specify with which "other local fire, ambulance or other such off-site organizations" it is alleging LILCO has not yet obtained agreements for services. Accordingly, EP3(C) is not admitted.

EP3(D)/EP18: Medical and Public Health Facilities Support

As noted in the August 25, 1982 letter from the Counsel for NSC, these two contentions are identical and EP18 has been withdrawn.

Not admitted.

These contentions apparently find their genesis in portions of old EP20(C) which we ruled in our July 27, 1982 order to be not admissible as written.

LILCO objects to these contentions as not being adequately particularized. It also asserts that subsection (1) should be consolidated with EP7(A), that subsection (2) should be consolidated with EP6, that subpart (3) should be consolidated with EP6(B) and that subsection (4) should be dropped as redundant to EP3(B). The Staff's filing objects to these contentions as lacking adequate bases and specificity.

We agree with both Staff and LILCO that subsection (1), which alleged that LILCO's plan "does not provide assurance" that off-site medical personnel required for on-site medical assistance have been trained to treat individuals sickened or injured by a radiological emergency, lacks particularization and bases. It is unclear what intervenors are alleging to be lacking from LILCO's plan or what they are seeking by way of "assurance" to have included as part of the on-site plan.

Additionally, as noted by the Staff, LILCO's plan states the availability of LILCO's Medical Director in Hicksville, N.Y. and an on-call physician from Radiation Management Corporation to respond to the plant site "as required." Section 6.5.3 of the LILCO plan provides that these persons "will be trained in the handling and treatment of patients involved in radiation accidents." Furthermore, the Letter of Agreement between LILCO and Radiation Management Corporation annexed to LILCO's emergency plan provides for the twenty-four hour availability of a Radiation Emergency Medical Team, consisting of a physician, certified health physicist and technicians with portable instrumentation, to respond to the location of any radiation accident victim. Subsection (1) is therefore without basis.

The Board also finds subsection (2), which alleges that no procedure exists to notify off-site medical personnel to report and that there is no assurance that such personnel will be available, to be inadmissible. Insofar as this contention relates to the notification of such personnel, we believe intervenors have already raised this matter under EP6(C), which we are admitting by this order. This portion of this contention is therefore dismissed as being redundant. If by their reference to the "availability" of such workers intervenors are alleging that these workers will fail to report due to conflicting obligations, we believe that portion of this contention to

already be fairly raised by EP6(A), which we admitted in our July 27, 1982 order, and we therefore find it to be redundant. If intervenors attach any other meaning to the word "availability" than that stated in EP6(A), they provide no particulars which would clarify that. We therefore deny this portion of subsection (2) as lacking adequate particularization.

Subsection (3) states that LILCO's plan is inadequate in that it "does not require that route instructions to reach Shoreham shall have been previously furnished or that appropriate identification to permit ready entry into the plant has been previously issued." If, by referring to LILCO's failure to provide direction to Shoreham prior to a radiological emergency, intervenors are attempting to allege that traffic congestion would affect the route which such response personnel would have to take to the plant, we believe this matter to be redundant to EP6(B). Otherwise, we believe this contention to lack basis and particularity. The intervenors provide no basis for their apparent conclusions that response personnel, including those indigenous to Long Island, will be unable to find their way to Shoreham without such instructions, or that LILCO, having requested the presence of such personnel at the site, will not permit their prompt entry. We note that training as to site access procedures for off-site personnel is covered by section 8.1.1 of the LILCO plan. NUREG-0654, Item II.O.1.a provides at n.1 that distribution of identification cards need only be accomplished where such cards are required by the plant in question. Accordingly, we believe this contention to be without basis.

Subsection (4) alleges the plan to have no provision to assure the availability of vehicles and trained personnel to transport on-site personnel requiring off-site medical treatment. Insofar as this contention relates to personnel, it appears to be clearly redundant to EP6(A) and therefore inadmissible. There is no basis stated or apparent to the Board that there will not be adequate vehicles on-site to transport on-site personnel who require off-site medical treatment.

Subsection (5) states that there are no procedures to relate the level of medical training and assistance which should be available to the escalating Emergency Action Levels (EALs) in plan Section 4. Staff objects to this contention as lacking basis and specificity and LILCO asserts that this contention is not adequately particularized.

We have examined both the regulations referenced in the preamble to this contention and those references intervenors make to NUREG-0654. We have found nothing which would require the development of these procedures which intervenors claim LILCO's plan to lack. Intervenors also fail to state in their contention any rationale as to why such procedures should be developed. Accordingly, we believe this contention to lack both basis and particularity.

Therefore, EP3(D) is wholly denied admission in this proceeding.

EP4: Federal Resources

Admitted.

We stated in our July 27, 1982 order that we believed this contention to lack adequate particularization and ruled it to be inadmissible as written. We also stated our belief that this matter is susceptible to settlement. Intervenor has slightly rewritten this contention, providing references to LILCO's plan and noting that LILCO's plan states that "although no Federal assistance is expected," other than that to be provided for in the Suffolk County plan and other non-LILCO plans, the LILCO "Response Manager has the authority to request any and all Federal assistance considered appropriate for the given situation."

LILCO objects that this contention has not particularized precisely what is lacking in the LILCO plan or what is objectionable about the LILCO plan, and has not defined what is meant by "local resources" available to support the Federal response. The Staff objects to this contention as lacking the particularization required by the Board, and as being without basis in light of certain information provided in LILCO's plan. We cannot agree.

Although we agree with LILCO and the Staff that this contention is not so well particularized as we might have liked, it is not without basis. Its language tracks the wording of NUREG-0654, Item II.C.1 and uses the same terminology as that NUREG, and relies on the language of the LILCO plan. We believe that intervenors intended to reference Part II of NUREG-0654 in their citations to that document, and we have therefore reworded the contention, as admitted, to reflect this error. We have also added to the contention a citation to NUREG-0654 Item I.I, which we deem relevant.

We note, however, that we still consider this matter to be "readily susceptible to settlement." The parties are therefore directed to enter into negotiations on this contention aimed at either resolving this matter, or at least better defining the issues for litigation as part of Phase I.

EP5: Protective Actions

This contention was admitted as EP5(A) in our July 27, 1982 order. As we then ruled EP5(B)-(D) to be issues more appropriate for discussion during Phase II, intervenors have slightly altered the format of this contention.

While acknowledging that the Board has admitted this contention, LILCO observes that this contention could be better particularized. LILCO asserts that the County should be required to incorporate references to LILCO's plan and implementing procedures, and to better specify what the County finds lacking in this material, including what "particular conditions existing in the Shoreham vicinity" have not been addressed by LILCO's plan with respect to protective actions.

On August 26, 1982, we noted on the record (Tr. 9716-9717) that we agreed as to the vagueness of the particular sentence referenced by LILCO and were considering striking it. We asked the County to reply in its response to LILCO's objections, noting that we were not asking for a respecified contention or a restatement of those matters referenced in EP1.

In its August 30, 1982 filing, the County asserts that the sentence of EP5 which states "LILCO has not assessed the relative benefits of various protective actions under the particular conditions existing in the Shoreham vicinity" is not vague, but points out a "vital flaw" in LILCO's plan:

Nowhere in LILCO's plan are protective actions discussed in the context of conditions existing on Long Island. For instance, nowhere is the feasibility of evacuation discussed in terms of the actual topography of Long Island, and there is no discussion of the evacuation shadow phenomenon. Nor is there a discussion of the relative benefits of sheltering in the types of homes found on Long Island.

We believe the above-quoted paragraph demonstrates just how vague the reference in EP5 to "particular conditions in the Shoreham vicinity" is. The County asserts as a "for instance," three topics which are alleged to be included within the phrase "local conditions," but offers no clue as to just how many "local conditions," nowhere specifically identified in EP5, it believes litigable under that broad subject heading or which it would assert under EP5.

Furthermore, the matters enumerated by the County as examples of local conditions are themselves either vague or Phase II matters. "[T]he feasibility of evacuation discussed in terms of the actual topography of Long Island" does not specify either what aspects of Long Island topography are in issue or what effects such features are alleged to have on evacuation.

While we believe we understand generally the phrase "evacuation shadow phenomenon," we believe that intervenors do not put this phrase in such a context so as to make the meaning the County ascribes to this phrase clear. We do not rule this matter to be unparticularized, but rather more appropriate for consideration during Phase II, if contentions with the requisite basis and specificity are raised at that time.

With respect to sheltering in homes, we note that we have ruled above in Contention EP1 that this matter may be litigated under the first sentence of the present EP5. This consideration shall be in the context of the assertion that this information is necessary to a determination of whether to recommend sheltering, or evacuation or other options for particular EALs. The second sentence is not necessary for this matter to be considered under EP5.

Accordingly, we believe the second sentence of intervenors' August 20, 1982 version of EP5 to lack adequate particularization. This sentence is therefore stricken from intervenors' contention.

EP6: Off-site Response Organization and On-site Response Augmentation

(A) *No analysis whether off-site response personnel or on-site augmenting personnel would report*

Admitted in our July 27, 1982 order.

We note that intervenors have deleted the phrase "many of whom are volunteers" from this contention. Neither LILCO nor the Staff opposed this change. The Board has no objections to this amendment of EP6(A).

(B) *Effects of traffic congestion*

Admitted in our July 27, 1982 order.

(C) *Notification procedures*

Admitted.

Former EP6(C) was apparently deleted as redundant in response to this Board's July 27, 1982 order that it be consolidated with EP3(C).

Current EP6(C) was formerly a portion of old EP13, which we described in our Prehearing Conference Order as being severable. Both parts were held to be inadmissible as written and susceptible to settlement. Intervenors have severed this portion of that contention and renumbered it, but have not otherwise altered its wording. LILCO objects to this contention as lacking adequate particularization.

While we believe this contention sufficiently vague to make this ruling a close call, we conclude that intervenors have stated a litigable contention within the bounds of 10 CFR §2.714. EP6(C) is therefore admitted. We direct the parties to attempt to agree on better specification of this contention promptly, and to report to the Board by September 21, 1982.

We believe this contention to contain a typographical error as it appears in intervenors' August 20, 1982 filing. Consistent with intervenors' July 6, 1982 statement of contentions, intervenors' reference to "NUREG-0054" is amended to read "NUREG-0654."

EP7: Training

In our July 27 order, we ruled this contention to be "susceptible to settlement," and directed that intervenors particularize, based on references to the recent revision of the LILCO plan, any matters which remain in issue. Intervenors have slightly rewritten this contention.

LILCO asserts that this contention has not been rewritten as directed by this Board and that it lacks particularity and basis. We address each subpart of this contention separately.

(A) *Offsite response agencies*

In response to our request that intervenors particularize their assertion that the LILCO plan has not provided adequate assurance that personnel from offsite response agencies will be trained, intervenors have included a reference to the LILCO plan at 5-8. This page of that plan includes Section 5.3, "Offsite Assistance for Onsite Support," which states, in pertinent part:

5.3 *Offsite Assistance for Onsite Support*

Fire protection for the area of Long Island where the plant is located is provided by volunteer fire departments which operate under the State and County Mutual Aid Plan. Under this plan, nearby departments provide support for the fire department involved in fighting a fire. Similar arrangements exist for the ambulances associated with these fire departments.

We agree that intervenors' reference to this section of the LILCO plan, without more, would not usually suffice to adequately particularize this contention. Its significance was explained at our July 20, 1982 prehearing conference, however, when intervenors noted that LILCO's plan relies on these mutual aid pacts and stated:

[O]ur thrust in this contention is that while we understand that there may have been some discussions between the utility and the Wading River Fire Department, that to the extent that in an emergency others are called upon to assist, that they would not know what to do once they got on-site. (Tr. 7347).

NUREG-0654, Item II.O.1.6, which is referenced by intervenors, provides that "[W]here mutual aid agreements exist between local agencies such as fire, police and ambulance/rescue, the training shall also be offered to other departments who are members of the mutual aid district.

While LILCO opposes this contention as lacking basis and specificity, its August 13 and 17 letters indicate that its attorneys are aware of the nature of intervenors' concerns, but the letters do not give any indication that LILCO's plan provides that appropriate training will be offered to all other member departments of mutual aid districts.

As the parties appear to be aware of the subject of this contention, even though its wording is vague, we do not dismiss this contention for lack of specificity and basis. Therefore, we are admitting contention EP7(A), subject to the limitation that testimony must focus on the question of whether adequate training will be provided to member departments of mutual aid districts whose members may be

called upon to provide assistance in the event of an emergency. The parties shall attempt to agree on specification of what training of which entities is lacking, and report to the Board by September 21, 1982.

(B) Training of LILCO personnel

The only response intervenors have made to our July 27, 1982 request for further particularization of this contention, in light of LILCO's recent revision of its emergency plan, is to add a citation to two sections of the Code of Federal Regulations.

In light of LILCO's recent revision of Chapter 8 of its plan (which is referenced by intervenors) and that plan's incorporation by reference of a three-volume training manual, we believe this contention to be woefully lacking in particularization; it merely alleges the information contained in LILCO's plan to be inadequate without identifying any specific fault with these documents.

Therefore, contention EP7(B) is denied as lacking adequate particularization.

EP8: Onsite Response Organization

Admitted in our July 27, 1982 order, at which time it was numbered EP9.

EP9: Public Information

Not admitted.

In our July 27, 1982 order, we stated our belief that this contention was susceptible to settlement, and directed that the contention (then numbered EP10) be clarified to state that it relates to the coordination of messages between LILCO and Suffolk County. Intervenors have not rewritten this contention, and apparently seek to litigate matters relevant to public messages.

The Staff does not object to this contention. LILCO asserts that this contention lacks adequate bases and particularity.

We agree with LILCO that intervenors have not particularized in their contention what they are alleging to be inadequate in LILCO's plan when they state only that it is not "clear" or "apparent" "in its plan" that Suffolk County should take a "major role" in determining the form and substance of messages to the public in the event of an emergency at Shoreham.

Nor do we believe there to be any basis for this contention. NUREG-0654, Item II.E.2 requires that a licensee develop such messages in conjunction with State and local officials. Intervenors allege, however, that the plan does not make the County's role in the development of these messages "clear" or "apparent." We read NUREG-0654 to require that messages to the public to be included in plans be

written by LILCO and State and local officials in conjunction with each other. There is no basis stated or apparent that this relatively simple task will not be done. Further, we do not read NUREG-0654 to require that the plans themselves state the origins of such messages.

This contention is therefore not admitted.

EP10: Emergency Operations Facility

This contention was admitted in our July 27, 1982 order as "EP12: Emergency Response Facility." Slight changes have been made in the wording of this contention. No party objects to these changes and neither does the Board.

EP11: Messages to the Public and to Offsite Authorities

Not admitted.

The first sentence of this contention appeared in intervenors' July 6 statement of contentions as EP14, which we ruled to be susceptible to settlement. The last two sentences derive from a part of old EP13, which we held both not admissible as written and "particularly susceptible to settlement." Other than this splicing together of former contentions, this contention has not been rewritten.

LILCO objects to this contention as lacking particularity and bases. LILCO also states that on August 17, 1982, it provided to the County the number of the Shoreham procedure that contains preplanned message statements, the section of the LILCO plan that contains the standardized message forms used by all nuclear power plants in the State of New York, and five sample messages to the public.

Intervenors' contention does not state, with either bases or particularity, any defect which is alleged to exist in these standardized messages. We are aware that NUREG-0654, Item II.E.2, requires joint approval of such messages by LILCO, the County and State officials. We do not believe, however, that the County's failure to yet approve these messages, without stating any specific objections to these messages, provides a basis for the County to assert a contention alleging the non-existence of such messages.

As the County has itself noted to this Board, and as this Board firmly believes, the public can be best protected only through the integrated planning efforts of the parties. This is true, whether this be with respect to the contents of messages to the public or any number of other items which NUREG-0654 directs that the applicant plan in conjunction with State and local officials.

We recognize that this information, contained in Revision 2 of LILCO's plan, was not in existence at the time of intervenors' first filing of contentions. We therefore, of course, do not fault intervenors for raising the absence of these matters in their July 6, 1982 statement of contentions. It is not appropriate, at

present, however. See *Duke Power Company, et al.* (Catawba Nuclear Station, Units 1 and 2) ALAB-687, 16 NRC 460 (1982). We believe the ball to now be in Suffolk County's court with respect to taking steps to resolve such matters, in conjunction with LILCO, if the public is to be best protected.

Accordingly, this contention is not admitted.

EP12: Radiological Exposure to Emergency Workers

This contention, formerly numbered EP16, was admitted in our July 27 order.

EP13: Emergency Classification System

Not admitted.

This contention, previously numbered EP18, was held in our July 27 order to be inadmissible as written. Intervenors have rewritten this contention greatly, providing much additional specificity.

The Staff, however, asserts that this matter does not raise a litigable concern. In its view, the fact that certain information is missing from particular FSAR Chapter 15 initiating conditions and many EALs does not form the basis for a contention as most of the blanks relating to instrumentation will be filled in later as a result of start-up testing. The Staff states that while the statements in this revised contention may be correct, this does not establish a litigable concern of safety significance, because the information must be provided prior to fuel load. On August 26, 1982, we asked the parties to address the Staff's position in their responses to the objections to intervenors' contentions. Tr. 9714-9715.

In its August 30, 1982 response, LILCO, which did not object to the admission of this contention originally, now asserts that the Staff is correct and requests that the Board deny this contention, stating that the County can repeat its concerns if, in fact, the EALs are not complete at the appropriate time.

The County appears to agree with the Staff's assertions about this contention, noting in its August 30, 1982 response that it is willing to resolve this issue subject to a commitment by LILCO that all blanks and missing information on the EALs be completed prior to the commencement of fuel load. The County asserts, however, that the Board should admit this contention, pending final resolution among the parties.

In light of the parties' apparent agreement that the missing information must be supplied by fuel load, we do not believe it necessary to admit this contention. LILCO should inform the County and parties promptly when these blanks are filled in. If these blanks are not filled in during a time-frame consistent with the litigation of Phase I of Emergency Planning issues and if this issue is not otherwise resolved by the parties, the County may set forth before the Board specific problems which

it then has with LILCO's failure to fill in these blanks, and the Board will then rule on the admissibility of such matters. Any such filing shall also state what significance the County attaches to LILCO's failure to fill in those blanks and shall also state why such specific allegations as to the significance of such blanks could not have been raised at the time of intervenors' August 20, 1982 filing of contentions. See *Duke Power Company, et al.* (Catawba Nuclear Station, Units 1 and 2) ALAB-687, 16 NRC 460 (1982).

EP14: Accident Assessment and Monitoring

Our July 27 order held this contention, then numbered EP19, to be not admissible as then written. Subparts A and B are substantially the same as they appeared in intervenors' July 6 filing. Subpart C is the contention relating to iodine monitoring which intervenors reserved the right to file in connection with their settlement agreement as to health and safety contentions SC28(a)(iii)/SOC7A(3). Subpart D is a rewrite of former subpart C of this contention. Objections raised to these matters are discussed below.

(A) *Field monitoring teams*

Admitted over objections of the Staff. LILCO does not oppose admission of this contention.

(B) *Real-time monitors*

Admitted over the objections of Staff. LILCO does not object.

(C) *Iodine monitoring*

Admitted.

The Staff objects to this contention as lacking basis and specificity, in that intervenors do not state any reason why the in-plant iodine monitors are insufficient to provide timely and accurate information as to the actual value of the quantity of iodine released into the environment in case of a radiological accident. LILCO objects to this contention as not adequately reflecting the parties' settlement agreement, and proposes a revised version of this contention. The parties were requested to jointly consider this matter and address it in their August 30, 1982 responses.

LILCO's response repeats its earlier objection that its settlement agreement with the County and SOC provides that "the scope of an iodine monitoring contention in

the emergency planning proceeding would not contest the details of the iodine monitoring system or LILCO's compliance with NUREG-0737 or Regulatory Guide 1.97 with respect to iodine monitoring," and asserts that this agreement concedes LILCO compliance with these standards.

The County's August 30, 1982 response disagrees with LILCO's reading of the settlement agreement. In the view of the County, the language of the settlement agreement was intended to preclude intervenors from directly contesting the compliance of the iodine monitoring system with NUREG-0737 and Regulatory Guide 1.97 in the language of any future contention. However, the agreement does not require that the intervenors concede LILCO compliance with those standards in the context of the emergency planning compliance issues.

We believe the County is correct in its reading of the settlement agreement. While the language cited by LILCO may appear, on its face, to support LILCO's position, our understanding of this settlement agreement was not that the County was conceding LILCO's compliance with NUREG-0737 and Regulatory Guide 1.97, but that the issue of such compliance was merely being moved into the context of compliance with emergency planning requirements. We conclude that the County's new contention, contesting LILCO's compliance with 10 CFR §50.47(b)(8) and (9), is in accord with the parties' earlier settlement agreement.

Further, we believe that the additional information in the County's response specifying what intervenors seek to contest with respect to EP14(C) cures the lack of particularization noted by the Staff. Accordingly, we admit this contention, as clarified by the information appearing in the County's August 30, 1982 response at pages 11-13.

(D) Failure to specifically identify radiation monitors

Not admitted.

LILCO and the Staff both object to this contention as lacking basis and specificity, in that these monitors are already identified in the LILCO plan at page 6-2 and in Table 6-1, in accordance with NUREG-0654, Item II.H.5.b.

The County states in its August 30, 1982 response that "[t]he County's objective in this contention is to have LILCO identify which effluent monitor will provide a reading for any particular EAL." It further states that its contention provides appropriate regulatory cites.

We do not believe 10 CFR §§50.47(b)(2), (4), (8), (9) or (10) to require that LILCO identify which effluent monitor will provide a reading for any particular EAL. Nor do we believe this to be required by NUREG-0654. As noted by LILCO, Item II.H.5 requires that each utility identify and establish "onsite monitoring systems that are to be used to initiate emergency measures in accordance with Appendix 1, as well as those to be used for conducting assessment" (emphasis

added), *not* that each effluent *monitor* be identified. LILCO's Table 6-1 appears to meet these criteria.

In this regard, we note that the County does not respond directly to LILCO's or the Staff's objections to this contention. If the County is seeking anything more than this listing, the basis for its contention is unclear to this Board. Therefore, this contention is denied as being without basis.

EP15: Communications with Off-Site Response Organizations

This contention is derived from old EP20(a), which our July 27 order held to be inadmissible as written. LILCO does not object to the admission of this contention. The Staff objects to portions of this contention. These objections are discussed below.

(A) Telephone power outage, sabotage or overload

Admitted.

(B) Telephone network vulnerability to extreme weather conditions

Admitted.

(C) Hotline communications network

Not admitted.

The Staff objects to this contention because (1) it asserts specific allegations not previously raised and is therefore untimely (2) NRC will be connected with Shoreham by a dedicated phone system, making connection to the hotline system unnecessary and (3) there is no basis for requiring identification of the personnel to use the hotline during this phase of the hearing in the absence of the County plan.

While we are uncertain, in light of LILCO's recent revision to its plan, that this contention would qualify as untimely, we agree with the Staff that intervenors have provided no basis as to why an NRC hotline connection with Shoreham is necessary, in light of existing plans for a dedicated phone system. We further agree with the Staff that there is no basis for litigating information yet to be provided by the County plan as to the identities of those persons using the hotline system. LILCO has identified its personnel who will be using these phones. *See* plan at 5.2.8. Accordingly, we find this contention to be without basis.

(D) Telephone overload

Admitted.

(E) Redundant power supplies

Admitted.

(F) Beepers

Admitted.

In light of the preamble to EP15, which is modified by each of the subparts, we do not understand the Staff's comment that this contention fails to state a contested issue.

(G) UHF and VHF radio base stations

Not admitted.

The Staff objects to this contention, insofar as it relates to communications with off-site agencies, as being without basis. The Staff states that the UHF radio has been established and verified to provide the capability of two-way voice communications between the Technical Support Center, Emergency Operations Facility and the downwind survey teams throughout the 10-mile EPZ (LILCO plan, Section 7.2.10). The Staff also asserts that while the plan contains no specific data about the VHF radio, which will provide the capability of two-way voice communication between the station and the police, the contention has set forth no reason to doubt the capability of these standard communications systems. The Staff also asserts there to be no basis for requiring the plan to demonstrate that the radio base stations must provide a reliable communications link between the facility and the Emergency News Center (ENC), since neither of these radios will be connected to the ENC.

We agree with the Staff's comments. We further note that this contention states no basis as to why the LILCO plan must include the data which is referenced in this contention, nor does it specify either why the data which appears in the LILCO plan is "insufficient" or what data intervenors believe must be presented to sufficiently address this matter.

This contention is therefore not admitted.

(H) National alert warning system

Admitted.

The Staff objects to this contention as being a new matter untimely raised. We are unsure whether this matter is untimely, in light of LILCO's recent plan revisions. In any event, we are very pleased by NSC's efforts in revising, refocusing and particularly renumbering old EP20. As we believe this contention to be stated with proper basis and specificity, it is therefore admitted.

EP16: Stress on Communications/Notifications Personnel

This contention appears to be an expanded version of old EP20(a)(8), which our July 27, 1982 order held to be inadmissible as written. As rewritten, this contention is limited to stress on LILCO notification personnel and specifically excludes issues related to *People Against Nuclear Energy v. Nuclear Regulatory Commission*, 678 F.2d 222 (D.C. Cir. 1982).

LILCO objects to this contention in its entirety as lacking particularity and asserts that as it deals with alleged inadequacies in the training program, it should be consolidated with EP7. The Staff's objections to each subpart are discussed below.

(A) Lack of training to deal with psychological stress

Not admitted.

The Staff objects to this contention because (1) it provides no basis that personnel will be subjected to psychological or mental stress during an emergency, (2) it provides no basis or specificity as to how the emergency training, drills and exercises will not adequately provide a means to overcome such stresses, and (3) it refers to no regulatory requirements as a basis for this contention.

We believe this contention to be without basis. We assume, despite the Staff's reluctance to do so, that a radiological emergency is a stressful situation. However, this contention does not specify any particular reason and basis for the implication that the planned emergency training, drills and exercises aimed at preparing for an emergency such as this would not adequately prepare LILCO personnel for such an emergency.

(B) Motivational training

Not admitted.

The Staff objects to this contention because (1) it is a new matter, not raised in old EP20, and is therefore untimely filed; (2) it provides no basis as to why such

motivational training is needed in light of the extensive training, drills and exercises that will be conducted; and (3) it provides no basis for the assertion that off-site personnel will have a natural reluctance to respond to the emergency and, therefore, a motivational program is needed.

We agree with the Staff that this contention does not assert a basis as to why motivational training such as this is necessary in light of the extensive training, drills and exercises that will be conducted. However, in light of our decision to admit EP6(A), the subject matters of which we believe to greatly overlap this contention, we will permit testimony in connection with that contention as to how intervenors allege that such motivational training would improve the likelihood of LILCO personnel reporting to the Shoreham site in a timely manner.

(C) Training for communicators

Not admitted.

The Staff asserts that this contention, which alleges that certain unnamed communicators "do not appear to be included" in the LILCO training program, is without basis. We agree. LILCO's plan provides, at Section 8.1.1(1), for the training of LILCO's Nuclear Emergency Communications Personnel and at Section 8.1.1(5), for communications drills and testing.

We also believe this contention to lack particularity, as it makes no attempt to specify which communicators it alleges not to be included in the training program.

EP17: Personnel Assignments to Communication/Notification

This contention was drawn from several subsections of old EP20, which we held in our July 27, 1982 prehearing conference order to be inadmissible as written.

(A) Dual capacity of watch engineer as emergency director

Not admitted.

This contention states that the LILCO plan, at Section 5.2.1, assigns the responsibility of Emergency Director to the on-shift Watch Engineer and asserts that there is no assurance that one person can perform simultaneously the duties of Watch Engineer and Emergency Director.

LILCO states that this contention should be consolidated with EP8. The Staff opposes this contention as lacking basis, since Section 5.2.2 of the LILCO plan provides for the Operations Manager or a more senior licensed operator to assume the duties of Watch Engineer, if the Watch Engineer has assumed the duties of Emergency Director. We agree with the Staff that this contention is without basis.

(B) Insufficient EOF notification personnel

Admitted.

This contention asserts that there is an insufficient number of personnel assigned to the EOF to assure proper notification of off-site emergency support and response agencies. The Staff asserts that this contention provides no basis or specificity as to why the number of communicators already assigned to the EOF would be inadequate. We believe intervenors to have set forth this contention with reasonable basis and specificity.

The Staff asserts in its objections that this contention ignores the role of the public affairs personnel as set forth in LILCO plan Section 5.2.9. It is not clear to the Board, however, what notification role the Staff is asserting that these persons will play, as Section 5.2.9 appears to address dissemination of information to the public, not notification to off-site emergency support and response organizations.

LILCO asserts that this contention should be consolidated with EP10. We disagree with LILCO as to consolidation, but believe that this contention should be tried in the same time-frame as EP10.

(C) Conflicting decisions

Not admitted.

This contention asserts that the LILCO plan has no safeguards against the possibility that the Emergency Director or the Response Manager may make communications/notifications decisions which conflict with State or County actions.

The Staff asserts that this contention is without basis, in light of the explicit division of responsibilities in the LILCO plan between LILCO, County and State officials in the event of an emergency. We agree.

As noted by the Staff, Section 5.4 of the LILCO plan provides that LILCO has the responsibility for implementing protective actions for all persons located in the area of the site "under owner control" and the notification of persons in residence at the St. Joseph's Villa. The State and County have the responsibility for implementing protective actions for all other members of the public. In light of this clear delineation of notification responsibilities, it is unclear what more in the way of "safeguards" against conflicting notifications decisions this contention is seeking. Therefore, it is denied admission as lacking basis and particularity.

EP18: Medical and Public Health Support

Withdrawn pursuant to the August 25, 1982 letter from Counsel for NSC, noting that this contention is redundant to EP3(D).

EP19: Recovery and Reentry

Not admitted.

In our July 27 order, we held this contention, then numbered EP21, to be not admissible as written and susceptible to settlement. Furthermore, we asked that this contention be revised and further particularized in light of LILCO's recent revision to its emergency plans, and in light of NUREG-0654, Item II.M and 10 CFR §50.47(b)(13). Intervenors have not attempted to revise this contention.

The Staff and LILCO note that LILCO's plan and implementing procedures have established specific procedures for recovery and reentry and assert that this contention does not particularize in what ways LILCO is alleged to have inadequately considered the concerns expressed.

We agree that in light of the specific LILCO plan sections and procedures which address this issue, which LILCO brought to the attention of SOC's attorneys in response to our July 27, 1982 order, intervenors have failed to adequately particularize those defects alleged to exist in LILCO's plan. Accordingly, this contention is not admitted.

EP20: Interim Safety Parameter Display System (SPDS)

Admitted.

This contention, previously numbered EP22, was held in our July 27, 1982 order to be inadmissible as written. Intervenors were requested to better particularize the subdivisions of this contention, particularly subpart (f). Subpart (f) has been dropped in this revised contention, and each remaining subpart has been referenced to parts of NUREG-0696.

LILCO and the Staff object to this contention as lacking adequate particularization, both asserting that intervenors have failed to provide the particularization ordered by this Board. We disagree.

While we believe this contention to be still somewhat vague, the matter in this contention about which we were most concerned was subpart (f), which referenced "human factors," without particular specification (Tr. 7385). With regard to the other subparts, what we sought was some better guidance as to their bases. Tr. 7386. The particular references to NUREG-0696 assist in this regard. While further particularization of this contention would have been desirable, we do not deem it essential for this contention to be admitted.

EP21: Emergency Implementing Procedures

Not admitted.

This contention, originally numbered EP24, was held not admissible as written by our July 27 order, and was ordered to be better particularized, or dropped if all necessary EIPs have been provided.

LILCO objects to this contention as lacking particularity in that intervenors have not identified the alleged blanks or missing information on these EIPs, nor listed the EIPs which are alleged to not be complete or approved. The Staff echoes this objection, adding that the missing information, if any, pertains only to procedures which may be further particularized in the future, but are not immediately required.

Suffolk County's August 30, 1982 response states that the EIPs which are alleged by this contention not to be complete are those which relate to the EALs alleged by EP13 to contain numerous blanks or missing information. LILCO agreed with this position in its August 30, 1982 response. We stated with respect to EP13 that we do not believe the non-existence of certain information which must be provided prior to fuel load and which will be provided as a result of start-up testing gives rise to a litigable contention. We also do not believe that the present absence of EIPs to be based on this information gives rise to a litigable contention at this time. *See Duke Power Company, et al.* (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460 (1982).

We believe this contention lacks particularity, as it does not state the specific EIPs which are alleged to be missing or what significance should be attached to their absence at this point in time. This contention is therefore not admitted. If this contention is in fact duplicative of EP13 given the parties' further responses, our ruling on EP13 is dispositive of this matter.

EP22: Accident Assessment Equipment

Not admitted.

In our July 27, 1982 order, we ruled this contention inadmissible as written and directed that it be further particularized. Intervenors have added a new paragraph to this contention, alleging that LILCO's plan is inadequate as it does not state the extent to which non-safety-related instruments and equipment will be relied upon and that any such reliance is inappropriate.

LILCO asserts that this contention seeks to relitigate SC/SOC 7(B), involving safety classification of equipment and systems interaction. Both the Staff and LILCO allege that this contention lacks adequate particularization. Suffolk County, in its August 30 response, denies that this contention seeks to relitigate SC/SOC 7(B), noting that it seeks to question the reliability of non-safety-related instruments.

We do not believe that intervenors have particularized what instrumentation they believe must be safety-grade, or why they believe non-safety-grade instrumentation to be inadequate. In addition, we note that none of the references in this contention provides any basis for intervenors' assertion that LILCO must identify in its Emergency Action Level scheme the extent to which non-safety-grade instruments and equipment are relied upon or why such reliance would be inappropriate or inadequate at Shoreham. This contention is therefore not admitted for lack of particularity and basis.

EP23: Accident Assessment and Dose Assessment Models

Admitted as EP27 in our July 27, 1982 order, as rewritten by the Board at that time.

EP24: Technical Support Center

Not admitted.

In its July 6, 1982 statement of contentions, intervenors sought to reserve the right to file contentions concerning LILCO's technical support center on completion of that structure. Our July 27, 1982 prehearing conference order directed that intervenors include any proposed contentions which they might have with respect to the technical support center in their August 20, 1982 filing. Tr. 7231:

The new contention filed by intervenors asserts that the technical support center will not be functional by the fuel load date, which it states to be currently scheduled for September 20, 1982. LILCO and the Staff object to this contention as lacking basis and particularity. Staff also asserts that LILCO's revised fuel load date is now projected to be in November 1982.

The Board believes there to be no basis for asserting that LILCO's technical support center will not be completed by LILCO's actual fuel load date, *whatever* date that might eventually be. If LILCO were to later propose to load fuel without the technical support center being complete, the intervenors may then propose a specific legal and/or factual issue. Accordingly, this contention is not admitted.

SCHEDULE

The parties are directed to continue to hold negotiations in an attempt to settle, narrow or further particularize admitted contentions. The parties shall file joint or coordinated status reports summarizing the efforts and progress achieved so as to be received by the Board by September 20, 1982.

The reports shall also include a specification with supporting explanation of which, if any, admitted issues would likely be materially affected by the comple-

tion of the Staff's on-site appraisal report. The report shall take into account the Staff's interim report, expected to be issued September 7, 1982, and all subsequent information.

The date for the receipt of written direct testimony or the contentions admitted by this order, as previously established, is October 12, 1982. That date remains in effect unless and until it is modified as to some or all of the issues. The parties are directed to consider and, if possible, agree on whether some of the direct testimony can be filed as early as September 28 or October 5 without disrupting orderly preparation of the remainder of the testimony. Positions on this point shall be included in the September 21 report.

ADMITTED CONTENTIONS

Attached to this order as Appendix A is a summary of which of intervenors' August 20, 1982 contentions have been admitted or denied by this order. An Appendix B to this order, which will state all contentions as admitted by the Board during Phase I of the Shoreham emergency planning proceedings, will be issued shortly. So as to assist the parties in focusing their negotiations and preparation of testimony on emergency planning issues, the Board has concluded that the issuance of this order should not be delayed pending the completion of that Appendix B.

THE ATOMIC SAFETY AND LICENSING BOARD

**Lawrence Brenner, Chairman
ADMINISTRATIVE JUDGE**

**Dr. Peter A. Morris, Member
ADMINISTRATIVE JUDGE**

**Dr. James H. Carpenter, Member
ADMINISTRATIVE JUDGE**

Bethesda, Maryland
September 7, 1981

APPENDIX A

The list below reflects the disposition of those contentions advanced in intervenors' August 20, 1982 "Phase One Consolidated Emergency Planning Contentions" by the Board's September 7, 1982 "Supplemental Prehearing Conference Order (Phase I — Emergency Planning)."

Admitted	Not Admitted
EP2(A)	EP1
EP2(B)	EP2(D)
EP2(C)	EP2(E)
EP3(A)(2)	EP3(A)(1)
EP3(A)(3) (As amended by Board)	EP3(A)(4)
EP3(B) (As rewritten)	EP3(C)
EP4 (As amended by Board)	EP3(D)
EP5 (Sentence stricken by Board)	EP7(B)
EP6(A) (As amended by Board)	EP9
EP6(B)	EP11
EP6(C)	EP13
EP7(A) (As limited by Board)	EP14(D)
EP8	EP15(C)
EP10	EP15(G)
EP12	EP16(A)
EP14(A)	EP16(B)
EP14(B)	EP16(C)
EP14(C) (As clarified by SC 8/30/82 Response)	EP17(A)
EP15(A)	EP17(C)
EP15(B)	EP18
EP15(D)	EP19
EP15(E)	EP21
EP15(F)	EP22
EP15(H)	EP24
EP17(B)	
EP20	
EP23	

APPENDIX B

ADMITTED PHASE ONE CONTENTIONS

The contentions listed below are those admitted by the Board's September 7, 1982 Supplemental Prehearing Conference Order which will be heard during Phase I of its hearings on emergency planning matters. Other than numbering these admitted contentions consecutively and making certain other changes in accordance with the Board's rulings in its September 7 order, the Board has not altered the wording or punctuation of these contentions from that which appeared in intervenors' August 20, 1982 "Phase One Consolidated Emergency Planning Contentions."

EPI: PROMPT NOTIFICATION SYSTEM (SC, joined by NSC and SOC)

LILCO intends that individuals situated within a 10-mile radius of the plant will be alerted to a radiological emergency through 89 sirens and approximately 150 tone alert receivers (Plan at 6-11 through 6-12; Wyle Laboratories Report WR 82-10 at 4-3). LILCO's system, known as the "Prompt Notification System," is inadequate to effectively notify the population which may be affected by a radiological emergency and thus fails to meet the requirements of 10 CFR §§50.47(b)(5) and (6), 10 CFR Part 50, Appendix E, Item D.2 and NUREG 0654, Items II.E and F for the following reasons:

- A. LILCO has failed to demonstrate that the siren coverage will not be constricted significantly during weather conditions such as rain, snow and fog, which have a tendency to muffle sound, as well as during high winds and thunderstorms which may adversely affect the ability to hear the siren.
- B. LILCO has not adequately demonstrated that in the event of a loss of power to all or part of the system, it could provide backup power in time to offer timely warning to the population.
- C. LILCO's prompt notification system does not provide complete siren coverage of all of the population within the EPZ as shown by the gaps evident on the map appended to the Wyle Report. LILCO has not adequately provided for notification of individuals who may be within the areas not covered by sirens.

**EP2: MEDICAL AND PUBLIC HEALTH SUPPORT
(SC, joined by NSC and SOC)**

- A. Suffolk County contends that LILCO, by designating Central Suffolk Hospital as the primary medical facility to treat contaminated injured individuals (Plan at 6-16), and further by designating University Hospital in Philadelphia, Pennsylvania for backup medical treatment (Plan at 6-16), has failed to provide adequate medical services for contaminated injured individuals as required by 10 CFR §50.47(b)(12), 10 CFR Part 50, Appendix E, Items IV.E.5 through 7, and NUREG 0654, Items K and L for the following reasons:
- (1) Central Suffolk Hospital may itself become subject to radiological exposure and/or evacuation given its location approximately nine miles from the Shoreham site (Plan at 6-16).
 - (2) University Hospital is too distant to provide timely treatment of contaminated injured individuals.
- B. Furthermore, LILCO has failed to adequately demonstrate that ground transportation (Plan at 6-16) is adequate for conveyance of contaminated injured individuals to Central Suffolk Hospital under the congested traffic or radiological conditions that are likely to exist during a radiological emergency. Thus, LILCO has failed to satisfy 10 CFR #50.47(b)(12), 10 CFR Part 50, Appendix E, Item IV.E.6, and NUREG 0654, Item II.L.4.

**EP3: FEDERAL RESOURCES
(SC, joined by NSC and SOC)**

The LILCO plan (Plan at 5-8) fails to provide for incorporation of Federal response capabilities into the plan. The plan states that "although no federal assistance is expected" other than that to be provided for in the Suffolk County plan and other non-LILCO plans, the LILCO "Response Manager has the authority to request any and all Federal assistance considered appropriate for the given situation" (Plan at 5-8; see also 5-10). The plan makes no mention of specific Federal resources expected to arrive at the facility and their estimated time of arrival, nor does it identify specific utility and local resources available to support the Federal response. In failing to do so, Suffolk County contends, LILCO has not satisfied the requirements of 10 CFR §§50.47(b)(1), (2) and (3), 10 CFR Part 50, Appendix E, Item IV.A.7, and NUREG 0654, Items I.1, II.A.2 and 3, and II.C.1.

**EP4: PROTECTIVE ACTIONS
(SC, joined by NSC and SOC)**

Suffolk County contends that LILCO has not met the requirements of 10 CFR §50.47(b)(10), 10 CFR Part 50, Appendix E, Item B, or NUREG 0654, Item II.J with respect to development and implementation of a range of protective actions for emergency workers and the public within the plume exposure pathway EPZ and with respect to development of guidelines for the choices of such actions in that the LILCO plan and procedures do not adequately discuss the bases for the choice of recommended protective actions (*i.e.*, the choice between various ranges of evacuation vs. sheltering vs. other options) for the plume exposure pathway EPZ during emergency conditions. Thus, LILCO does not have sufficient knowledge or information to provide reliable, accurate protective action recommendations.

**EP5: OFFSITE RESPONSE ORGANIZATION AND ONSITE
RESPONSE AUGMENTATION
(SC, joined by NSC and SOC)**

Suffolk County contends that LILCO has failed to provide reasonable assurance that onsite assistance from offsite agencies will be forthcoming in the event of a radiological emergency at the Shoreham site (see, *e.g.*, Plan at 5-8 and 6-15). LILCO has therefore not met the requirements of 10 CFR §§50.47(b)(1), (2), (3), (8), (12) and (15), 10 CFR Part 50, Appendix E, Item A, and NUREG 0654. In addition, LILCO has not demonstrated adequately that it will be able to augment its onsite emergency response staff in a timely manner (see Plan, Ch. 5). LILCO has also, therefore, failed to meet the requirements of 10 CFR §50.47(b)(1) and (2). Thus:

- A. It does not appear that LILCO has addressed or analyzed the possibility that offsite personnel and/or onsite augmenting personnel expected to report to the Shoreham site for emergency duty, would fail to report (or report in a timely manner) because of conflicting family (or other) duties that would arise in the event of a radiological emergency.
- B. LILCO has not adequately demonstrated the possible effects of traffic congestion during evacuation of the population upon the ability of offsite personnel and/or onsite augmenting personnel to respond promptly to the Shoreham site.
- C. LILCO has not developed notification procedures for offsite response organizations and onsite personnel (both those onsite at the time of an emergency and those called to report for duty after an emergency has commenced) in a manner consistent with the emergency classification and action level scheme set forth in NUREG 0654, Appendix 1. LILCO

has, therefore, not ensured that sufficient trained personnel will be available when required.

EP6: TRAINING
(SC, joined by NSC and SOC)

Suffolk County contends that LILCO has failed to meet the training requirements of 10 CFR §§50.47(b)(11) and (15), 10 CFR Part 50, Appendix E, Item F, and NUREG 0654, Items II.K and O for all personnel who may be called upon to assist in an emergency in that LILCO has not provided adequate assurance (Plan at 5-8) that fire, ambulance, and other such personnel from offsite agencies in the vicinity of the Shoreham plant which are expected to respond for emergency duty have received adequate radiological emergency response training. Without such training, the County contends that an adequate response as required by §50.47(b) [cannot be assumed.]*

EP7: ONSITE RESPONSE ORGANIZATION
(SC, joined by NSC and SOC)

Suffolk County contends that LILCO has not satisfactorily delineated the responsibilities of LILCO response personnel, nor has it demonstrated adequately that it will be able to augment its emergency response staff in a timely manner. Thus, LILCO's emergency response plan is not in compliance with 10 CFR §§50.47(b)(1)(2)(3) and (8), 10 CFR Part 50, Appendix E, Items A and C, and NUREG 0654, Items II.A, B, C and H for the following reasons:

- A. The LILCO plan at 5-4 through 5-8 does not clearly define and distinguish between the functions of the Emergency Director and the Response Manager;
- B. Table 5-1 does not clearly demonstrate LILCO's ability to augment its staff within 30 minutes of declaration of an emergency and is not in compliance with Table B-1 of NUREG 0654.

*Those words appearing in brackets above were not included in intervenors' August 20, 1982 "Phase One Consolidated Emergency Planning Contentions." This language appears in the version of this contention filed by intervenors on July 6, 1982, but was apparently inadvertently omitted from the August 20 filing. We therefore amend this contention to include these words.

EP8: EMERGENCY OPERATIONS FACILITY
(SC, joined by NSC and SOC)

Suffolk County contends that LILCO's plan and procedures for operation of its Emergency Operations Facility is not in conformance with the requirements of 10 CFR §50.47(b)(8), 10 CFR Part 50, Appendix E, Item IV.B.8, and NUREG 0654, Item II.H in that:

- A. The LILCO plan at 7-3 states that the EOF shall achieve operational readiness within two hours of declaration of an emergency. Such an activation time violates the one hour requirement of NUREG 0696.
- B. There is, as yet, no provision for obtaining at the EOF, or at any other LILCO emergency response facility, information relating to seismic phenomena (Plan at 7-9).
- C. LILCO proposes to activate its EOF only upon declaration of a Site Area or General Emergency (Plan at 7-2). The EOF should be activated at an earlier time in an accident to ensure operational readiness in the event that an accident escalates to a more severe classification level.

EP9: RADIOLOGICAL EXPOSURE
(SC, joined by NSC and SOC)

LILCO has failed (Plan at 6-12 through 6-16 and related EIPs) to demonstrate that it has established the means for controlling radiological exposures to emergency workers (both LILCO personnel and those from offsite agencies). Thus, it has not met the requirements of 10 CFR §§50.47(b)(11) and (15), 10 CFR Part 50, Appendix E, and NUREG 0654, Items II.K and O in that:

- A. The plan inadequately describes provisions for monitoring individuals evacuated from the site (Plan at 6-12).
- B. The plan does not describe action levels for determining the need for decontamination of emergency response personnel.
- C. The plan does not adequately delineate guidelines for emergency workers to follow to ensure that exposures received by such workers are not excessive.

EP10: ACCIDENT ASSESSMENT AND MONITORING
(SC, joined by NSC and SOC)

Suffolk County contends that LILCO's plan (see Chapter 6) is inadequate with respect to its ability to assess and mitigate accidents and monitor radiological releases from the Shoreham facility in the event of a radiological emergency. Thus, LILCO has failed to comply with 10 CFR §§50.47(b)(2), (4), (8), (9) and

(10), 10 CFR Part 50, Appendix E and NUREG 0654, Items II.B, D, H, I and J in the following respects:

- A. LILCO's commitment to only three field monitoring teams (Plan at 6-8) is inadequate given the large area and population that will need to be covered in the event of an accident. Furthermore, LILCO's failure to require deployment of monitoring teams prior to the site emergency stage, and the time necessary (60 minutes) for such deployment, are inadequate for timely monitoring of potential radiological releases.
- B. LILCO does not intend to use real time monitors at fixed locations that can be remotely interrogated.
- C. The equipment intended for use by LILCO to monitor plant effluent does not provide timely and accurate information as to the actual value of the quantity of iodine released to the environment in the case of a radiological accident. In the absence of such timely and accurate information, LILCO is unable to initiate an adequate response to the release of iodine to the environment in the case of such an accident.

**EP11: COMMUNICATIONS WITH OFF-SITE RESPONSE
ORGANIZATIONS**
(NSC, joined by SOC, SC will participate as an interested County
pursuant to 10 CFR §2.715)

The Plan relies completely for communication with off-site national, state, and local response organizations upon telephone communications (*e.g.* 7.2.1 through 7.2.8) and on a low powered UHF Radio Based Station with a VHF Radio Based Station (7.2.10).¹ It fails to meet the criteria of 10 CFR 50.47(b)(2)(5)(6), 10 CFR 50 Appendix E, IV Paras D(3) and E(9) and NUREG 0654, Appendix 3, Para C(1), in the following respects:

- A. Insofar as the Plan relies on telephone communications (7.2.1 through 7.2.8), it does not take into account the possibility of (1) a power outage, (2) sabotage and (3) overload. This omission is especially significant because the Plan describes the Hotline² as the "primary means for notification of the State and County of emergency conditions at Shoreham." (7.2.1; see also 5.4).
- B. Assuming that the telephone communications depend upon overhead, outdoor lines (there is nothing to the contrary in the Plan), the telephone

¹ In this connection NSC notes that the Plan refers to the Suffolk County Radiological Emergency Response Plan (*e.g.*, 5.3, 7.2.4). In view of the County's oft stated position that no such plan is now in existence and that its plan will not be filed until October, NSC requests a reservation for additional contentions if the County's Plan, as filed, should so require.

² Hotline(s) are "dedicated phone lines, made operational upon pick-up of the receiver and selection of desired location . . ." (7.2.1).

- communication network is vulnerable to extreme weather conditions, especially to sleet and ice formations on its lines and poles.
- C. The Plan relies on commercial telephone lines as “the primary communication link” for hospitals, Coast Guard, and DOE (7.2.4). These lines will become overloaded in an emergency, thus preventing communication with these vital offsite organizations.
 - D. The Plan does not describe the “redundant power supplies” (7.2) which purportedly ensure communications with off-site facilities.³ NSC understands a “power supply” to mean the source of the power to maintain the communications systems and not the different communication modes and systems.
 - E. The personnel to whom beepers are issued have varying responsibilities to notify response organizations. However, the beeper requires them only to call in to predetermined numbers (7.2.9), using commercial telephone lines.
 - F. The Plan describes the National Alert Warning System (NAWAS) as the “primary back-up communications link between the Shoreham site and off-site officials.” (7.2.3) It does not otherwise describe NAWAS and therefore it is impossible to determine if it can perform its assigned task. For example, there is no description of its load capacity, coverage, or technical configuration; nor does it name the “off-site officials” and their agencies who are linked to NAWAS.

EP12: PERSONNEL ASSIGNMENTS TO COMMUNICATION/NOTIFICATION

(NSC, joined by SOC. SC will participate as an interested County pursuant to CFR §2.715)

The Plan’s assignment of personnel to communications and notification responsibility is inadequate, both in the number of personnel assigned and because it overburdens those assigned with too many tasks. It thus does not meet the standards of 10 CFR 50.47(b)(1) and (7), and 10 CFR Appendix E, IV Para D (1)(3) and (9), in the following respects:

- A. An insufficient number of personnel are assigned to the EOF to assure proper notification to off-site emergency support and response organizations (5.2.8, 5.5.1, 7.1.3)

³The back-up power source relates only to intra- and on-site communication (7.2.7).

**EP13: INTERIM SAFETY PARAMETER DISPLAY SYSTEM (SPDS)
(SC, joined by SOC and NSC)**

Suffolk County contends that the interim SPDS that LILCO proposes to utilize until the installation of a permanent SPDS is deficient because it does not meet minimum requirements for such a system. Specifically, the interim SPDS does not:

- A. provide all required parameters [NUREG 0696 at 26];
- B. provide for data verification [NUREG 0696 at 24];
- C. provide trending capability [NUREG 0696 at 25-26];
- D. provide information to the TSC and EOF [NUREG 0696 at 25]; and
- E. provide the function of aiding the operator in the interpretation of transients and accidents, nor does it provide this function during and following all events expected to occur during the life of the plant, including earthquakes [NUREG 0696 at 27].

Thus, the interim SPDS does not meet the requirements of 10 CFR §§50.47(b)(4), (8), and (9), 10 CFR Part 50, Appendix E, Items IV.E.2 and 8, 10 CFR Part 50, Appendix A, GDC 13, and NUREGs 0696, 0737 and 0654, Item I.

**EP14: ACCIDENT ASSESSMENT AND DOSE ASSESSMENT
MODELS
(SC, joined by SOC and NSC)**

LILCO's plan fails to provide reasonable assurance that adequate methods, systems and equipment for assessing and monitoring actual or potential off-site consequences of a radiological emergency condition are in use, and therefore does not comply with 10 CFR §50.47(b)(9).

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Helen F. Hoyt, Chairman
Dr. Emmeth A. Luebke
Dr. Jerry Harbour

In the Matter of

Docket Nos. 50-443-OL
50-444-OL
(ASLBP No. 82-471-02-OL)

PUBLIC SERVICE COMPANY
OF NEW HAMPSHIRE, *et al.*
(Seabrook Station, Units 1 and 2)

September 13, 1982

The Licensing Board rules on petitions to intervene and admission of contentions, and schedules further proceedings.

MEMORANDUM AND ORDER

PART I. INTRODUCTION AND SUMMARY

Pursuant to *Establishment of Atomic Safety and Licensing Board to Preside in Proceeding* dated November 30, 1981, this Board was constituted to preside over the proceeding and hearing of the application for operating license in Docket Nos. 50-443-OL/444-OL.¹

¹ On August 25, 1982 in *Notice of Reconstitution of Board*, issued by Acting Chief Administrative Judge Robert M. Lazo, ASLBP, Dr. Jerry Harbour replaced Dr. Oscar H. Paris as a member of the Board.

Petitions for Intervention to participate in these proceedings were filed by twelve individuals or organizations including the States of New Hampshire and Maine, Commonwealth of Massachusetts and Town of South Hampton. By this Memorandum and Order the Board has accepted the following Intervenors and their contentions:

Intervenors	Contentions²
<i>State of New Hampshire (NH)</i>	NH 9 Radioactivity Monitoring.
	NH 10 Control Room Design.
	NH 13 (Refiled) Operation Personnel Qualifications.
	NH 20 Emergency Assessment, Classification and Notification.
	NH 21 Protective Action (limited to on-site measures).
<i>New England Coalition on Nuclear Power (NECNP)</i>	I.A.2 GDC 4 Standard for Electrical Equipment.
	I.B.1 Classify Safety Grade "Residual Heat Removal" Items.
	I.B.2 Time Duration of Environmental Qualification.
	I.C Pumphouse HVAC Environmental Qualification.
	I.D.1 Reactor Welds NDT.
	I.D.2 Protection System Test at Power.
	I.D.3 Leakage Detection Testing Required.
	I.D.4 GDC-2 Standard Not Complied with by Applicant.
	I.F Diesel Generator Qualification.
	I.G Pressure Instrument Reliability.
	I.I Cold Shutdown.
	I.L PORV Flow Detection Monitoring.

² Where an Intervenor's interest had been in litigating off-site emergency planning issues, the Board denied these contentions. See *Duke Power Company, et al.* (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460 (1982).

NECNP Continued

- I.M Fire Protection.
- I.N Solid Waste Disposal.
- I.U Turbine Missiles.
- II.B.1 QA for Operations — FSAR Sec. 17.2 Fails to Address App. B Criteria Adequately.
- II.B.3 QA Organization Not Independent.
- II.B.4 QA Program for Replacement after Operations Begin.
- II.B.5 QA — Presence of Qualified QA/QC Personnel.

Commonwealth of

Massachusetts (admitted under provisions of 10 CFR §2.715(c))

Seacoast Anti-Pollution League (SAPL)

SAPL Supplement 3 — Class 9.
SAPL Supplement 6 — Adopted.
NH 9, 10, and 13 (Refiled).
Designated Joint Intervenor with NH.

Coastal Chamber of Commerce of New Hampshire (CCCNH)

CCCNH-4 Accident Classification and Notification.
CCCNH-5 On-Site Protective Measures.
CCCNH-7 Radioactivity Monitoring.

Town of South Hampton

(admitted under provisions of 10 CFR §2.715(c))

State of Maine (admitted under provisions of 10 CFR §2.715(c))

The Board has determined that all Intervenor submitting the contentions discussed in Part II have attained standing under 10 CFR §2.714(a) or 2.715(c). *Lynn Chong et al. and Co-Op Members for Responsible Investment (CMRI)* did not appear at either of the Special Prehearing Conferences but did submit contentions in a pleading filed May 25, 1982, which was a supplement to its petition to intervene of November 14, 1981. Applicants and Staff opposed intervention. CMRI urged the Board to accept its assertions that as part owner of the proposed

Seabrook facility³ and as members of the general public subject to harm from an accident at Seabrook⁴ it had acquired standing to intervene. The Board notes that CMRI did not cure deficiencies in regard to its standing under 10 CFR §2.714(a) either in appearances before the Board or in written pleadings. Accordingly, the Board finds that CMRI has not satisfied the standing requirements of 10 CFR §2.714(a). CMRI's proposed contentions need not be considered.

Petitions to intervene were also received from Health Care Providers (November 17, 1981) and Donald L. Herzberg, M.D., and George Margolis (November 16, 1981). Neither of these groups pursued the petitions further. Accordingly, the Board dismisses these petitions of the named groups for failure to prosecute.

Part II of this Memorandum and Order is a discussion of the contentions of the Intervenor, arguments made by various participants in this proceeding and the Board's reasons for accepting or denying contentions. The Board has retained in this discussion each Intervenor's numbering of a contention for identification with other pleadings. However, by a separate order, the Board will republish accepted contentions and assign new reference identification for use in future proceedings.

Appendix A is the schedule for this proceeding. The Board in establishing the schedule considers the dates set forth to be target ones. Where good cause for altering these dates is established, the Board will entertain changes to achieve a fair hearing and orderly case management.

PART II. PETITIONERS AND THEIR CONTENTIONS

STATE OF NEW HAMPSHIRE (NH) (Petitioner under 10 CFR §2.714)

NH filed its 22 contentions in an *Amendment and Supplement to the Petition for Leave to Intervene and Request for Hearing of the State of New Hampshire and Gregory H. Smith, Attorney General of the State of New Hampshire* on April 6, 1982. The Applicants responded on April 15, 1982 and the NRC Staff on April 21, 1982. At the May 6-7, 1982 Special Prehearing Conference⁵ the Intervenor, Applicants, and NRC Staff amplified their arguments. Tr. 45-119. The Intervenor was afforded an opportunity to provide more specifics on Contentions 6, 7, 12, 13 and 14 (Tr. 239) and to attempt to reach agreement through negotiations with Applicants and NRC Staff. Tr. 54. No negotiations took place. (Letter/NRC Staff Lessy to the Board, July 1, 1982.) On May 24, 1982 NH filed *Amended Contention*

³ *Detroit Edison Company* (Enrico Fermi Atomic Power Plant, Unit 2), ALAB-470, 7 NRC 473, 475 (1978).

⁴ *Ten Applications for Low-Enriched Uranium Exports to EURATOM Member Nations*, CLI-77-24, 6 NRC 525, 531 (1977).

⁵ PHC-I = (First) Special Prehearing Conference, May 6-7, 1982; and PHC-II = Second Special Prehearing Conference, July 15-16, 1982.

of the State of New Hampshire and Gregory H. Smith, Attorney General of the State of New Hampshire. A number of the contentions⁶ were refiled; others were redrafted differently from the filing of April 6. The Applicants responded on June 10, 1982; the NRC Staff on July 1, 1982. Oral arguments were heard at PHC-II on July 16, 1982. Tr. 633-639.

This Board will consider and rule upon the admissibility of NH's 22 contentions as stated in this Intervenor's pleading of April 6, 1982. The numbered contentions above will be stated in their entirety as refiled on May 24, 1982.

NH-1: *Interim Reliability Evaluation Program*

A thorough, plant-specific interim reliability evaluation program using probabilistic risk assessment techniques to find risk dominant sequences, consider multiple failures and assess the reliability of systems which may be called upon to mitigate an accident, is necessary to assure that the Seabrook Plant safety review has considered the appropriate high-risk accident sequences to ensure compliance with 10 CFR 50.46.

The Intervenor relies upon the Three Mile Island Accident Plan, NUREG-0737, at Part I.C.1 which refers to a requirement to perform analysis of transients and accidents. Applicants oppose admission of the contention on the basis that it is not required by any regulation of this Commission and that this Board's jurisdiction is limited to items regarding compliance with the Commission's safety regulations *Maine Yankee Atomic Power Company* (Maine Yankee Atomic Power Station), ALAB-161, 6 AEC 1003 (1973). NRC Staff essentially agrees and adds that there is no statutory or regulatory basis shown to establish that compliance with 10 CFR §50.46, "Acceptance criteria for emergency core cooling systems for light water nuclear power reactors" could only be met by providing the probabilistic risk assessment NH urges be performed in NH-1. Any PRA done by the Applicants at the Seabrook Plant is an optional engineering tool used by the Applicant. It does not give this Board a criterion against which to test the safety of the operation of the Seabrook Plant. Indeed, nuclear power plants are routinely licensed without such an assessment. It is the determination of this Board that admission of Contention NH-1 is *denied*.

NH-2: *Systems Interaction*

The Applicant has not performed an adequate analysis of systems interaction and thus, there is no assurance that the appropriate interac-

⁶ NH Contentions 6, 7, 12, 13 and 14 were refiled on May 24, 1982. Although NH redrafted several other contentions including NH-3, the Board granted NH leave to redraft only the five noted herein. NH Contention 16, Ultimate Heat Sink, was voluntarily withdrawn in the pleading of May 24, 1982 (p. 20).

tions, failure combination and accident sequences have been considered in assessing the ability of the systems design to meet 10 CFR 50 Appendix A. This contention relates to both the consideration of the interaction of safety and non-safety systems and the interaction and multiple failure of safety systems. There are systems and components presently classified as non-safety related which can have an adverse affect on the integrity of the core because they can directly or indirectly affect temperature, pressure, flow, and/or reactivity. The interaction between non-safety and safety systems may create demands on the safety systems that exceed their design basis. Not only must the Applicant perform fully an analysis of systems interaction, but also it must identify all systems and components which can either cause or aggravate an accident or be called upon to mitigate an accident and thus should be classified as important to safety and required to meet all safety grade design criteria.

The Intervenor supports the admission of the contention herein on the basis that Three Mile Island demonstrated that there are systems and components which are classified as non-safety related but which can have an adverse effect on the integrity of the core. In support of this position New Hampshire cites NUREG-0578, The Three Mile Island II Lessons Learned Task Force Report, and NUREG-0572, Review of Licensee Event Reports.

Applicants note that in this contention New Hampshire seeks to require Applicants to perform a comprehensive analysis of systems interaction although there is no requirement in either NUREG-0737 or in NRC regulations. The Staff has noted that NH has not identified any statutory or regulatory basis to establish that 10 CFR Part 50, Appendix A requires analysis of systems interaction sought by Intervenor here. The Staff urges denial of this contention. *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-81-27, 14 NRC 325 (1981). The Diablo Canyon Board found that the Intervenor had not established any special circumstances or identified specific interactions (*Id.* at p. 331).

This Board is aware that the Shoreham Licensing Board in Memorandum and Order Confirming Rulings Made at the Conference of Parties, (*Long Island Lighting Company* (Shoreham Nuclear Power Station, Unit 1), LBP-82-19, 15 NRC 601 (1982)), admitted a contention similar to NH-2 without any demonstration that the contention is litigable under current Commission regulations. This Board chooses to follow the lead of the Diablo Canyon decision above and the language cited above of that Board in denying the admission of a similar contention. Indeed, the Diablo Canyon Board and this Board have determined that there is no basis for litigation of this contention. Contention NH-2 is *denied*.

NH-3: *Class 9 Accidents*

The Applicant has not presented, contrary to the requirements of 10 CFR 51.20(a),(d), a complete assessment of the risk posed by the operation of Seabrook. The environmental report and the environmental impact statement should adequately address and evaluate the impact of a greater than design basis accident or "Class 9" accident on the environment. Unless the so-called "Class 9" accident is adequately considered, there can be no reasonable assurance that Seabrook can be operated without endangering the health and safety of the public. Since the draft environmental impact report was not available for the preparation of this contention, the state reserves the right to amend this contention at a later date.

As a basis for this contention, Intervenor in its written pleadings and during oral argument stated that its basis is NUREG-0737, Section 1(c)(1). Tr. 69. The Applicants take the position that NH has failed to relate its contention to the environmental impact statements set out in the Commission's interim policy statement of June 13, 1980 (45 *Fed. Reg.* 40101) and has attempted to freight onto the contention its own view of what the law should be. Even in its redraft of NH-3 filed May 24, 1982, after the oral arguments at the prehearing conference, NH failed to, in Applicants' view, relate NUREG-0737, Item 1(c)(1) and the Commission's interim policy statement issued June 13, 1980, 45 *Fed. Reg.* 40101, to the NEPA policy statement of June 13, 1980.

The NRC Staff viewed the contention as being without basis because it did not address the requirements set forth in the Commission's interim policy statement dealing with Class 9 accidents. Further, NH's charge that the WASH-1400 methodology had been discredited does not provide a specific basis for a contention. The charge by NH that the environmental report does not consider the impact of human factors on the probability of an event occurrence, in the Staff's opinion, does not provide a sufficient basis.

As stated in *Philadelphia Electric Company* (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-216, 8 AEC 13, 20-21 (1974), a contention must be rejected where it constitutes an attack on applicable statutory requirements; it challenges the basic structure of the Commission's regulatory process or is an attack on the regulations; it is nothing more than a generalization regarding the Intervenor's views of what applicable policies ought to be; it seeks to raise an issue which is not proper for adjudication in the proceeding, or it does not apply to the facility in question; or it seeks to raise an issue which is not concrete or litigable. Such deficiencies appear applicable to NH's Contention 3. NH has not added to this contention that degree of specificity required for the admission of NH-3. Contention NH-3 is *denied*.

NH-4: *Anticipated Transients Without Scram (ATWS)*

The Applicant and the NRC Staff have not demonstrated that the risk from an ATWS event is sufficiently reduced by interim measures to provide a reasonable assurance that the Seabrook station can be safely operated prior to the resolution of the generic issue.

NH relies upon NUREG-0460 — Anticipated Transients Without Scram for Light Water Reactors as the basis for this contention. NH states that the Staff position is that the reliability of current scram systems cannot be shown to be adequate to meet the safety objective considering the rate at which these systems are challenged by anticipated transients. NH seeks to have this contention admitted as either the subject of a proposed rulemaking or as an unresolved safety issue which will be discussed in the SER.

The Applicants' position is that the Licensing Board should not accept in an individual licensing proceeding contentions which are or are about to become the subject of general rulemaking by the Commission. *Sacramento Municipal Utility District* (Rancho Seco Nuclear Generating Station), ALAB-655, 14 NRC 799, 816 (1981); *Potomac Electric Power Company* (Douglas Point Station, Units 1 and 2), ALAB-218, 8 AEC 79, 85 (1974). Further, the Applicants distinguish the order issued in the Shoreham case permitting an ATWS contention to be received by that Licensing Board. NH's contention is not the same as the contention admitted in the Shoreham case in that the Shoreham contention is framed in terms of a lack of a specific item (automatically initiated redundant SLCS⁷) which served the Intervenor there as the basis for saying GDC 20 was not met. The Staff has responded that NH-4 has made no attempt to show that the interim operation of the Seabrook facility will be in violation of any applicable Commission regulations and it likewise seeks rejection of the contention.

It is the position of this Board that the contention as framed by NH does not meet the specificity requirements and, in addition, note that the ATWS is before the Commission in the form of a proposed rulemaking procedure. This Board therefore rejects the receipt of Contention NH-4 in the litigation of this case.

NH-5: *Liquid Pathway Impact*

The Applicant has not adequately considered the consequences of a nuclear accident resulting in releases of radiation and exposure to the public by the liquid pathway, *i.e.*, into ground water which can contaminate aquifers, rivers, and streams. The failure to consider adequately liquid pathway accident impacts and corrective measures

⁷ Standby liquid control system.

results in the inability to satisfy the standards of 10 CFR 50.40 and 10 CFR 51.21.

As a basis for NH-5, NH has argued that a core meltdown accident at the Seabrook plant would cause the groundwater to become a pathway for radioactivity releases to the hydrosphere. NH is contending that the FSAR does not deal with major releases and that the environmental report did not study the liquid pathway. NH does not provide a basis for the position that special treatment of liquid pathways should be required for Seabrook. The Applicants' position is that NH has failed to point to any regulation of this Commission which requires core catchers for Seabrook vintage plants. The Staff position parallels that of the Applicants and both seek rejection of this contention.

The Board finds that the interpretation that NH places on core melt does not provide this contention with a basis for litigation in this proceeding. NH does not state a lack of compliance with the Commission's Interim Policy Statement on Class 9 Accidents (45 *Fed. Reg.* 40101 [June 13, 1980]) nor does it state a basis for the view that special treatment of liquid pathways should be required for Seabrook. Contention NH-5 is *denied*.

Revised NH-6: *Environmental Qualification of Safety-Related Equipment*

The Applicant has not complied with the requirements of the Division of Operating Reactors guidelines and NUREG-0588 and NUREG-0737. The environmental qualification of safety-related equipment is inadequate in four respects:

- (a) The parameters of the relevant accident and environment have not been identified;
- (b) The length of time the equipment must operate in the environment has been underestimated;
- (c) The method used to qualify the equipment are not adequate to give reasonable assurances that the equipment will remain operable; and
- (d) The effects of aging and cumulative radiation on the equipment has not been adequately considered.

As a basis for this contention, NH maintains that all safety-related equipment must comply with Appendices A, G, and K of Part 50 and Criteria III and XI of Appendix B, Part 50 and 10 CFR 50.55a. NH further maintains Applicants must perform the radiation qualification review required by NUREG-0737 II.B.2 and implement the testing program for reactor solvent system relief and safety valves required by II.D.1. Further, NH urges that until all safety-related equipment is demonstrated to be qualified by appropriate analysis and testing the application for this OL has not complied with General Design Criteria 1, 2, 4, 21, and 23 of Appendix A.

The Applicants reject this contention as failing to specify the equipment NH is contending is safety-related and/or fails to comply with the various regulations cited. Likewise the NRC Staff notes that NH has made no attempt in this refiled contention to meet the objections to the original contention that this Intervenor had not identified the particular equipment or even the categories of equipment that are alleged to be environmentally qualified. Thus, both the Applicants and the Staff contend that this contention even in its refiled state is objectionable as not meeting the specificity requirements of 10 CFR §2.714.

Contention NH-6 is *denied*.

This Board agrees there has been ample opportunity extended to this Intervenor to file an appropriate contention dealing with the environmental qualifications of safety-related equipment and to name those categories of equipment which it holds are not meeting the safety requirements of this Commission. Unless this Intervenor can meet the requirements of §2.714 by specifically naming the equipment, then this Board determines that the issue is too broad to be litigated in this operating license proceeding. The Board finds that the contention in its refiled state is not substantially different from the original contention which NH filed. Since NH has not specifically designated the equipment or categories of equipment, this Board rejects this contention at this time. Because of the importance which this Board assigns to the environmental qualifications of safety-related equipment, NH may be afforded an opportunity to refile this contention later if NH appropriately identifies the equipment which it maintains does not meet the environmental qualifications necessary for maintenance of safety at this installation. However, NH should be advised that the Board has determined such a refiled contention at a later date would need to meet the requirements of §2.714(a)(1) dealing with non-timely filings of contentions and the five categories set forth under that section.

Refiled NH-7: *Instrumentation*

The Seabrook station instrumentation is not in compliance with general design criteria GDC 13, 10 CFR Part 50, Appendix A and the requirements of NUREG-0737.

As the basis for this contention, NH relies upon the results of the investigation of the TMI-2 accident which NH maintains indicated a need for more direct indications of low-reactor coolant levels, reactor vessel water level, inadequate cooling, and hydrogen generation. Further, this Intervenor maintains that the TMI-2 accident also demonstrated the inadequacy of the monitoring in terms of the parameters monitored, range and adequacy of the instrumentation and the qualifications of the instrumentation for the accident and post-accident environments. As a further basis, NH points to the Kemeny Commission Report, *Report of the President's Commission of the Accident at Three Mile Island (1970)*, and the four areas identified as needing further improvement by the NRC Staff. These areas are

as follows: (a) direct and unambiguous measurements of the parameters, such as water level in the reactor vessel and the relief valve position; (b) extended range measurement of important parameters, such as in-core couples and radiation monitors to cover both normal operational and accident conditions; (c) ability to function in high-radiation and high-temperature environments, especially during and after an accident; and (d) information displayed to the operator in a comprehensive form.

NH notes that the instrumentation must be considered safety related because its greatest contribution is operation under accident conditions. Such information from the instrumentation is critical for public officials to have available to provide a basis for decision-making in emergency situations.

The Applicants find the contention vague and inadmissible. The NRC Staff objects because it did not incorporate any of those subject matters discussed during the PHC-I which would have brought a proper basis and specificity lacking in the originally filed NH-7. The Staff objects to this refiled contention because it fails to meet both the basis and specificity requirements.

The Board rejects this contention based in part upon the oral arguments made during PHC-I. Tr. 82-87. NH has not provided even an indication of what kind of instrumentation it seeks to litigate in this case and admitted to the Board that in its opinion such specificity was not required but that the contention need only satisfy the requirement to place the Applicants and the Staff mentally on notice as to what issue was going to be litigated. It appeared to this Board that NH was clearly launched upon a general search course without the merest idea of what direction its search might take. NH-7 refiled contention is *denied*.

NH-8: *Hydrogen Control Systems*

The Applicant has not demonstrated that in the event of a loss-of-coolant accident at Seabrook (1) substantial quantities of the hydrogen (in excess of the design basis of 10 CFR 50.44) will not be generated; (2) that in the event of generation, the hydrogen recombiner can process adequately the hydrogen generated; and (3) that in the event of combustion, the containment and key safety systems within containment have the ability to withstand pressure, thereby preventing releases of off-site radiation in excess of Part 100 guideline values.

The basis on which NH makes this contention is whether the Applicants have complied with 10 CFR 100 by designing this plant to withstand an accident such as that at TMI which resulted in hydrogen being generated in excess of the hydrogen design basis assumptions of 10 CFR 50.44. The Intervenor here bases the contention on the need for the Applicants to demonstrate whether or not the generation and combustion of hydrogen and the following failure of reactor containment to withstand hydrogen combustion would result in public radiation exposure in excess of that permitted by Part 100. Since pressures from hydrogen explosions

could threaten the structural integrity of the containment, NH maintains, the subsequent purging of the containment to relieve pressure may result in unacceptable levels of radionuclides; hence a credible accident scenario exists with regard to the Seabrook plant involving hydrogen production resulting in off-site doses in excess of Part 100 limits.

Both the Applicants and the NRC Staff base their opposition to this contention on the failure of NH to state a credible scenario for the generation of hydrogen in excess of the 10 CFR 50.44 design bases, and cites its authority for such a requirement the case of *Metropolitan Edison Company* (Three Mile Island Nuclear Station, Unit 1), CLI-80-16, 11 NRC 674 (1980).

This Board agrees with the Applicants and Staff in regard to this contention. In spite of an opportunity to refile this contention, to have made some additional showing either in the oral hearings on May 7 or in their refiled pleadings, this Intervenor has not set forth that credible scenario which it wishes to litigate in this case. In the absence of the identification of such scenario, Contention NH-8 therefore is *rejected*.

The Board wishes also to note that in 46 *Fed. Reg.* 58484 (December 2, 1981), it was determined that the TMI scenario was no longer an acceptable scenario for the generation of hydrogen in excess of the §50.55 design basis.

NH-9: *Radioactivity Monitoring*

The Seabrook design does not provide an adequate program for monitoring the release of radioactivity to the plant and its environs either under normal operating conditions or in pre- and post-accident circumstances. Thus, the application is not in compliance with general design criteria 63, 64 of Appendix A, 10 CFR Part 50, and the requirements of NUREG-0737 and NUREG-0800.

Neither the Applicants nor the NRC Staff objects to the admission of this contention.

This Board admits Contention NH-9. It is this Board's understanding that this contention raises the question of the conformity of the in-plant monitoring system with the cited provisions of NUREGs and GDCs.

NH-10: *Control Room Design*

The Seabrook Station control room design does not comply with general design criteria 19 through 22 and 10 CFR Part 50, Appendix A, and NUREG-0737, item I.D.1 and I.D.2.

The basis of this contention is to assure that displays and controls added to the control room after the DCRDR⁸ do not increase the potential for operator error. It is critical at Seabrook that the accident monitoring and control room be the optimum because of the difficulties inherent in carrying out protective actions for the population in the immediate vicinity of the plant.

Neither the Applicants nor the Staff has objected to the admission of this contention.

The Board concludes that the basis for the contention is sound and NH-10 is *admitted*.

NH-11: *Deviation from Current Regulatory Practice*

The Applicant has not justified and the NRC Staff has failed to require documentation for all Seabrook deviations from current regulatory practices. The Seabrook facility, due to its long licensing history, has in many instances been reviewed by the staff against guides and standards which have subsequently been updated or modified. Neither the Applicant in the FSAR, nor the NRC Staff, has systematically described standards against which Seabrook has been reviewed and the basis for the acceptability of any deviations from any current regulatory practices. This circumstance is not acceptable, particularly since the Board must make findings based upon the applicable regulatory requirements.

The Applicants object to this contention because it does not conform to any current regulatory practice of this Commission and the NRC Staff joins this objection and further states that the contention is a mere generalization regarding the Intervenor's view of what applicable policies should be.

This Board *rejects* Contention NH-11 and finds that there is no regulatory requirement for such a review as proposed by the Intervenor here and further that the proposals which NH would have this Board rule upon are not within the jurisdiction of this Board.

Refiled NH-12: *Quality Assurance*

The Applicant has failed to establish and execute a quality assurance/quality control program which adheres to the criteria set forth in 10 CFR Part 50, Appendix B.

NH points to the past NRC Staff practice of documenting deviations at the plant as not being conservative enough to protect the health and safety of the public. NH's further basis is that (1) the Applicants have not documented in the FSAR

⁸ Detailed Control Room Design Review. This review was performed by NRC Staff after the TMI accident.

where Seabrook design structures and components do not conform with current regulatory practices (*i.e.*, Regulatory Guides, branch technical positions, and standard review plans) and the basis for an acceptability of those deviations; and (2) the NRC Staff has not set forth in the Safety Evaluation Report the standard against which Seabrook has been reviewed and the basis for any deviations from current regulatory practices approved by the Staff.

The Applicants' position is that the quality assurance issue in an operating license proceeding does not include "execution" in any respect, because operational QA program is not "executed" until operations begin. Further, the Applicants find that what NH is trying to do in this case is to litigate the CP QA when the remedy NH has is a petition to this Commission's Director of Nuclear Reactor Regulation under 10 CFR §2.206.

The NRC Staff attacks the contention as failing to meet the specificity requirements of 10 CFR 2.714. The Staff finds that the NH suggestion that the contention be admitted so as to permit discovery is an admission by NH that it in fact lacks specificity in framing an admissible contention under the Commission's regulations.

This Board rejects refiled contention number 12 because it does not advise this Board what QA system NH wishes to litigate for this operating license. It appears to this Board that without detailing information NH is not in fact looking for a mechanism by which to litigate a safety contention but to launch an expedition seeking information as to whether such a contention could ever be framed. In light of the vagueness with which this contention is framed, the Board hereby *rejects* Refiled Contention NH-12.

Refiled NH-13: *Operations, Personnel Qualifications and Training*

The Applicant has not demonstrated that the following and all other operations personnel, are qualified and properly trained in accordance with NUREG-0737, items I.A.1.1, or I.A.2.1, I.A.2.3, II.B.4, I.C.1, and Appendix C: (a.) station manager; (b.) assistant station manager; (c.) senior reactor operators; (d.) reactor operators; and (e.) shift/technical advisors (Tr. 634).

Neither the Applicants nor the NRC Staff objects to the contention as stated above.

Refiled Contention NH-13 is *admitted*. The Board, in admitting this contention, specifically limits any litigation to only the five categories of personnel listed above.

Refiled NH-14: *Reliable Operation Under On-Site Emergency Power*

The Applicant has not demonstrated in its FSAR that the on-site power system complies with general design criteria 2,

4, 5, and 50 of 10 CFR Part 50, Appendix A, and thereby has not adequately ensured reliable operation of Seabrook Station in the event of loss of off-site power and a LOCA at the plant.

As a basis for this contention, NH states that the NRC Staff has recognized the unresolved safety problem which arises from the unreliability of emergency on-site diesel generators. To alleviate the problem of a double failure if the off-site power was also lost, NH seeks to demonstrate the urgent need of a diesel generator system with a high reliability control and monitoring instrumentation for temperature and pressure for its cooling water system and engine lubrication system. NH notes in its basis that Applicants' FSAR 9.5 fails to adequately address problems associated with diesel generator reliability.

The Applicants object to the admissibility of this contention as being vague and "based upon a marshland of nonspecifics." The NRC Staff objects to the contention as failing to specify in what manner the on-site power system fails to meet the General Design Criteria.

With the FSAR before it this Intervenor could not frame a contention which specifically identifies in what manner the on-site emergency power failed. With drawings and engineering data in the FSAR, NH still did not lay out in its contention the basis upon which it found the on-site emergency power to be defective. For this reason this Board *rejects* Refiled Contention NH-14.

NH-15: *Unresolved Safety Issues*

The Applicant and the NRC Staff have not adequately addressed certain unresolved safety issues nor justified a substitute approach for resolving these issues with respect to the Seabrook facility, and thus, have not complied with 10 CFR Part 50, Appendix A, General Design Criteria 2, 4 and the standards of 10 CFR 50.40. As requirement for the issuance of an operating license, the Applicant must demonstrate either that each applicable generic issue has been resolved for the particular reactor or the existence of measures employed at the reactor to compensate for the lack of a solution to the problem. *Virginia Electric & Power Company* (North Anna Power Station, Units 1 and 2, ALAB-491) (1978). A finding that each unresolved safety problem applicable to Seabrook has been addressed must be made.

As a basis for this contention, NH states that the SER is the place where the unresolved safety problems must be reviewed. NH relies upon the *Gulf States Utilities Company* (River Bend Station, Units 1 and 2), ALAB-444, 6 NRC 760 (1977), where the Appeal Board of this Commission had discussed the need for a summary description in the SER of those generic problems which have relevance to the facilities under review. As NH admits in its pleadings the SER has not been

filed and it wished to reserve the right to raise such contentions at an appropriate time. Until such time as the Staff has filed the Safety Evaluation Report, this contention is deemed premature. Contention NH-15 is *denied*. See also *Duke Power Company, et al.* (Catawaba Nuclear Station), ALAB-687, 16 NRC 460 (1982).

NH-16: *Ultimate Heat Sink*

The State of New Hampshire has voluntarily withdrawn this contention.

NH-17: *Environmental Impact*

The Applicant in its Environmental Report and the Staff in its Final Environmental Impact Statement have not demonstrated compliance with the provisions of 10 CFR 51.20 and 51.26 respectively. Based on the information available, the Applicant has not shown that a monitoring and surveillance program will be established which is adequate to satisfy the requirements of 10 CFR Part 50, Appendix I. Additionally, it is not clear that Criterion 60 through 64 of 10 CFR Part 50, Appendix A will be complied with. At the time this contention was developed, the NRC draft Environmental Impact Statement was not available. For this reason, Petitioners reserve the right to provide amended contentions on the issue of environmental impact when that document becomes available.

NH-18: *Health and Environmental Monitoring*

The Applicant has not provided an adequate surveillance and monitoring program for releases of radioactive material which complies with the provisions of 10 CFR 50 Appendix I and 10 CFR 51.2. Thus, the application does not satisfy the standards of 10 CFR 50.40.

The basis which NH offers for these two contentions is a recitation of the health and safety requirements of the regulations without any indication that new information has been developed from the time this issue was litigated during the Seabrook construction permit proceeding. *Public Service Company of New Hampshire, et al.* (Seabrook Station, Units 1 and 2), LBP-76-26, 3 NRC 857, 877-78 (1976). In the absence of new information, NH is estopped from raising the same issues in the operating license proceeding that were raised in the construction permit stage of this proceeding. *Alabama Power Company* (Joseph M. Farley, Units 1 and 2), CLI-74-12, 7 AEC 203 (1974).

The Board *rejects* Contentions NH-17 and NH-18. The off-site radiation monitoring was litigated in 1976 at the CP stage and at a time when Appendix I had already been issued. Appendix I was issued May 5, 1975 (45 *Fed. Reg.* 19439).

NH-19: *Financial Qualifications*

The Applicant has not demonstrated reasonable assurance of its ability to obtain financing necessary to cover the costs of operating and shutting down both Seabrook I and II as required by 42 USC, §2232(a); 10 CFR §§50.33(f), 50.40, 50.91; and 10 CFR Part 50, Appendix C.

NH offers as a basis for this contention a recitation of various quotes from financial journals and reports indicating that the Applicants' bond rating has been lowered; the inability of the Applicants to obtain financing because of its poor financial condition; the failure of the Applicants to obtain buyers for their part ownership in the Seabrook project and NH's conclusion that the Applicants will be unable to raise revenue through rate increase relief which would permit it to meet its own forecast of financial needs.

Both Applicants and NRC Staff seek a rejection of this contention based upon the Commission's recently changed regulations to preclude consideration of financial qualifications in operating license proceedings where public utilities are concerned. *See 47 Fed. Reg. 13750* (March 31, 1982), amending 10 CFR §50.33(f).

In view of the lack of any regulatory base for admitting this contention, the Board *rejects* Contention NH-19.

NH-20: *Emergency Assessment, Classification, and Notification*

The accident at TMI demonstrated the inability of all parties involved to comprehend the nature of the accident as it unfolded; communicate the necessary information to one another, to the Federal, state and local governments and to the public in an accurate and timely fashion; and to decide in a time manner what course to take to protect the health and safety of the public. The Applicant in these proceedings has not adequately demonstrated that it has developed and will be able to implement procedures necessary to assess the impact of an accident, classify it properly, and notify adequately its own personnel, the affected government bodies, and the public, all of which is required under 10 CFR 50.47 and Appendix E and NUREG-0654.

As a basis for this contention, the Intervenor contends that the emergency classification and action scheme required by 10 CFR 50.47(b)(4) and NUREG-0654, Appendix 1 as outlined in Section 9 of Applicants' emergency plan is inadequate since it should address the postulated accidents in the FSAR and Emergency Plan. In addition, NH maintains that the Environmental Plan [sic] should state the basis for selecting a certain emergency action level. The responsibilities of the unit shift supervisor and the shift superintendent relating to the operating procedures and the emergency implementing procedures must, in NH's

opinion, be more clearly delineated. NH maintains that the emergency plan of the Applicants does not reflect that there is adequate and continual staffing as required in 10 CFR 50.47(b)(2) and NUREG-0654, Table B-1. NH maintains that the emergency plan does not demonstrate establishment of notification to appropriate local authorities or the notification by Applicants of authorities responsible for implementing protective measures within the Plume Exposure Emergency Zone, as required by NUREG-0654, Criterion J.7, page 60. NH further notes that the emergency plan fails to set forth the required basis for a choice of recommended protective actions for plume exposure pathways under emergency conditions as required by NUREG-0654, Criterion J.10(m). Further, the emergency plan does not, in NH's opinion, establish that "information will be made available to the general public on a periodic basis on how they will be notified and what the initial actions should be in an emergency." Procedures for coordinated dissemination of information to the public have not been established as required by 10 CFR 50.47(b)(7).

Applicants seek to have the contention rejected and substitute for NH 20-22 a single contention which would state that the Applicants have not complied with 10 CFR 50.47 and 50, Appendix E. The Staff does not object to a contention alleging that the on-site emergency planning does not comply with the applicable provisions of 10 CFR 50.47, 10 CFR Part 50, Appendix E, and NUREG-0654.

This Board has determined that NH has adequately met the requirements of the regulations and the specificity prescribed by 10 CFR 2.714. Since an on-site emergency plan has been filed by the Applicants and NH has expressed the concerns which it deems need protection, this Board *admits* Contention NH-20.

NH-21: *Protective Action*

The State contends that the Applicant's emergency plan does not demonstrate how, in case of an accident resulting in a site area or general emergency, the large numbers of people in the zone of danger may be protected or evacuated. Until there is reasonable assurance that adequate on-site and off-site protective measures can and will be taken, the Board should not issue an operating license.

As a basis for this contention, the State of New Hampshire cites 10 CFR 50.47(a) and (b), 10 CFR 50, Appendix E, and NUREG-0654, and NH expresses its concern about the adequacy of the emergency plan which does not contain any off-site preparedness plans of State or local emergency response organizations.

The NRC Staff expresses the same objections to NH-21 as it did to NH-20 and that any contentions raised on off-site protective measures would be premature at this point since emergency plans have not yet been developed.

The Board has determined that so much of NH-21 dealing with off-site protective measures will be rejected at this time. Contention NH-21 as modified herein (limited to on-site protective measures) is *accepted*.

NH-22: *Emergency Planning Zones*

Applicant's acceptance without formal analysis or evaluation of circular 10- and 50-mile radius for the Emergency Planning Zones does not discharge the applicant's responsibility to ensure that adequate emergency response plans exist to protect the public health and safety in the event of an emergency at Seabrook. See Section 4.3 of the Emergency Plan. Designation of circular 10- and 50-mile Emergency Zones is unjustified because such emergency planning zone does not consider local emergency response needs as they are affected by such factors as demography, topography, land characteristics, access routes, and jurisdictional boundaries.

The basis for this contention and the various arguments of both the Applicants and the NRC Staff are similar to those filed in regard to NH-20-21. The Board *denies* Contention NH-22 because it deals with local emergency plans not yet filed.

**NEW ENGLAND COALITION ON NUCLEAR POLLUTION (NECNP)
(Petition under 10 CFR §2.714)**

Petitioner NECNP filed on April 21, 1982, a list of contentions in three categories — I. Technical Safety Contentions; II. Quality Assurance Contentions; and III. Emergency Planning Contentions. This was supplemented by additional contentions in category IV. Blockage of Coolant Flow to Safety-Related Systems and Components by Buildup of Biological Organisms; and category V. NEPA Cost-Benefit Analysis. These supplemental contentions were received on July 19, 1982 (undated). Applicants' response to NECNP's first list of contentions was filed June 28, 1982. Staff's written comments are presented in responses dated May 19 and July 1, 1982. There are additional written comments and revisions by NECNP dated June 17 and by the Applicants dated June 28. There were oral arguments at the July 15-16 prehearing conference. Tr. 306-535. After PHC-II, NECNP filed reworded contentions on July 26, 1982.

NECNP noted several deficiencies in the organization of the reports about the Seabrook Plant and requested leave to file additional contentions later. The responses by Applicants and Staff and the oral arguments at prehearing conference gave much emphasis to the fact that regulatory guides are not to be viewed as NRC requirements. In their filing, NECNP states their view that regulatory guides do not constitute NRC requirements but that the guides themselves constitute a factual basis for their contentions and provide a benchmark against which the Board may judge compliance with the regulations.

I. Technical Safety Contentions

NECNPI.A.1: NECNP contends that the Seabrook facility cannot be licensed because it does not meet the Commission's standards for environmental qualification of electrical equipment under 10 CFR Part 50, Appendix A, General Design Criteria GDC 4. The FSAR's discussion of environmental qualification is deficient in four respects: (1) the parameters of the relevant accident environment have not been identified; (2) the length of time the equipment must operate in the accident environment has not been included as a factor; (3) the methods used to qualify the equipment are not adequate to give reasonable assurance that the equipment will remain operable; (4) the effects of aging and cumulative radiation exposure on the equipment have not been adequately considered. (Tr. at 309-319) (Revised wording filed July 26, 1982.)

Petitioner asserts that because of the Three Mile Island accident, GDC 4 requires more rigorous environmental qualification testing than was previously the case in order to provide reasonable assurance that electrical equipment will function for the entire time period in which it is needed. The Final Safety Analysis Report's discussion of environmental qualification is deficient in four noted respects. The Applicants' FSAR at 1.8-33 states that the Applicants have complied with Regulatory Guide 1.89 in qualifying electrical, instrumentation and control equipment. Regulatory Guide 1.89, however, is not the applicable standard for environmental qualification. The Commission has set DOR Guidelines and NUREG-0588, which are more detailed and specific than Regulatory Guide 1.89, as the standards for compliance with GDC 4. The accident at Three Mile Island, in which theoretically qualified equipment did not function for the time period in which it was needed, showed that the Commission's standards at that time were inadequate to provide a reasonable assurance that plants may be operated safely. Although *Petition for Emergency and Remedial Action*, CLI-80-21, 11 NRC 707 (1980) was issued after the accident, the Commission stated specifically that it had not attempted to incorporate the lessons of TMI into the decision.

Staff states that the TMI Action Plan and NUREG-0737 do not require the action requested by NECNP in its contention, and that NECNP would impose requirements beyond those required by the Regulations and the Action Plan.

The Commission did issue a revised Statement of Policy at 45 *Fed. Reg.* 85236 on December 24, 1980. It allowed previously forbidden challenges to the sufficiency of the supplementation of the Regulations and the Action Plan but that supplementation does not relieve a proponent of an additional requirement, in this

case NECNP, of the burden of demonstrating that compliance with the Commission's Regulations is not a sufficient basis upon which to grant a license. NECNP has not met its burden and Staff objects to the contention. The contention completely fails to meet the basis and specificity requirements of the Regulations. Tr. 310-312. The equipment in question is not identified; the concept of "all electrical equipment" is too broad. Tr. 310-312, 317.

Applicants have no problem with the contention if it would stop at the end of the first sentence, *i.e.*, at "GDC 4." That alone is the rule against which this application can be measured.

The Board *denies* NECNP I.A.1 because it is a challenge to the Regulations and lacks specificity.

NECNP I.A.2: The Applicants have not complied with GDC 4 standards regarding qualification tests of electric valve operators installed inside the containment. (Tr. 319) (Revised wording as filed, July 26, 1982.)

NECNP maintains that electric valve operators must be environmentally qualified to meet GDC 4 as implemented by CLI-80-21 and as may be further required to provide a reasonable assurance that the equipment can survive an accident environment of the harshness and duration experienced at TMI Unit 2.

Staff and Applicants objected to the original contention seeking to litigate the environmental qualifications of such electrical equipment as having no sound regulatory basis with respect to the requirements in CLI-80-21.

The Board *admits* NECNP I.A.2 as reworded.

NECNP I.A.3: The Applicants have not complied with GDC 4 in that they have not environmentally qualified electrical equipment inside the containment to withstand the effects of the hydrogen release and burn such as occurred at Three Mile Island Unit 2. (Tr. 320-321) (Revised wording as filed July 26, 1982.)

NECNP states that this contention does not challenge the adequacy of hydrogen control at Seabrook, but asserts that a higher level of hydrogen release must be considered for the purpose of environmental qualification. The hydrogen control requirements of §50.44 may differ from hydrogen release assumptions for the purpose of environmental qualification, just as the 5% standard of §50.44 differs from the 17% assumption for the purpose of ECCS acceptance criteria under 10 CFR §50.46(b).

Applicants in their response of April 26 state that there is no requirement in any regulation (including GDC 4) that electrical equipment inside the containment be qualified to "withstand the effects of the hydrogen release such as occurred at Three Mile Island Unit 2." The regulations to protect from events which could

follow post-accident H₂ buildup are found in 10 CFR §50.44. The prevention of fire has been selected as the method to provide protection. The contention should be excluded. *Maine Yankee Atomic Power Company* (Maine Yankee Atomic Power Station), ALAB-161, 6 AEC 1003 (1973).

Staff, in its pleading of May 19, states that this contention would be litigable only upon a showing that there is a credible scenario for the generation of hydrogen in excess of the 10 CFR §50.44 design basis. *Metropolitan Edison Company* (Three Mile Island Nuclear Station, Unit 1), CLI-80-16, 11 NRC 674 (1980); 46 *Fed. Reg.* 58484 (December 2, 1981). Such a scenario has not been demonstrated and the contention should be rejected. During oral argument (Tr. 323) the Staff noted that the Commission is considering adding a rule on hydrogen control.

The Board *denies* NECNP Contention I.A.3 on the basis that there is no regulatory requirement for electrical equipment inside the containment to withstand the effects of a hydrogen release and burn as occurred at TMI. There is no requirement that mandates a higher level of hydrogen release to be considered for the purpose of environmental qualification of electrical equipment.

NECNP I.B.1: The Applicant has not satisfied the requirements of GDC 4 and GDC 34 in that all systems required for residual heat removal, such as steam dump valves, turbine valves and the entire steam dumping system are not safety grade and environmentally qualified. (Tr. 324-326) (As filed June 17, 1982 on p. 6.)

NECNP states as its basis that GDC 34 requires that a system to remove residual heat be provided. Residual heat removal systems are considered to perform safety functions because they transfer decay heat from the reactor core; therefore they should be safety grade and environmentally qualified under GDC 4.

The Applicants would limit this contention to the components mentioned. Staff does not object to the contention but would limit it to the "residual heat removal" system and views the components listed as examples in that system only.

The Board *admits* Contention I.B.1 as filed June 17, 1982.

NECNP I.B.2: The Applicant has not satisfied the requirements of GDC 4 that all equipment important to safety be environmentally qualified because it has not specified the time duration over which the equipment is qualified. (Tr. 327) (Original of 4/21/82.)

In its basis, Petitioner cites the Three Mile Island Accident which persisted for a lengthy period and makes necessary that all equipment important to safety be required to operate for long periods of time. Applicants do not object to the admission of this contention. NECNP's reply of June 17 on this contention has

satisfied the staff's objection which stated that GDC 4 contains no provision that time durations for such equipment must be given.

The Board *admits* NECNP Contention I.B.2.

NECNP I.C: *Environmental Qualification — Emergency Feedwater Pumphouse HVAC*

According to Table 1.3-2, sheet 14 of the FSAR, the applicant has added a new heating ventilating and air conditioning (HVAC) system for the emergency feedwater pumphouse. Only parts of the HVAC system are considered safety-related and environmentally qualified. NECNP contends that the entire system and its function must be environmentally qualified, and that the environmental qualifications must take into account the likely duration of an accident during which the HVAC system would be relied upon (Tr. 327-220) (As originally filed April 21, 1982).

The emergency feedwater pumphouse and its equipment are capable of functioning and can be relied upon to function only within a particular temperature range, the HVAC system is required to maintain conditions within that range. The environmental qualification must take into account the fact that the equipment may be required to operate for a considerable length of time in the event of an accident.

The Applicants responded to this contention by listing parts of the emergency feedwater pumphouse HVAC which are environmentally qualified, and maintaining that no regulation exists which requires environmental qualification of more equipment. Further, the contention does not specify what to litigate. Petitioner replied on June 17 with more specific information, naming electrical cables as an example and noting the apparent failure to qualify the cables constitutes a factual basis for the contention. This reply has satisfied the Staff's objection to the contention's basis filed on May 19.

The Board *admits* this contention, NECNP I.C.

NECNP I.D.1: The Applicants have not complied with GDC 1 with respect to ultrasonic testing of reactor vessel welds during preservice and inservice examination. (Tr. 330-331) (As reworded July 26, 1982.)

Petitioner asserts that the Applicants have stated they do not intend to comply with all the terms of Regulatory Guide 1.150, yet it does not indicate any alternative ways in which the requirements of the regulatory guide will be satisfied.

Applicants objected to use of Regulatory Guide 1.150 in the original contention and suggested the rewording. Both Petitioner and Staff accepted this rewording of the contention. Tr. 330-332.

The Board *admits* NECNP Contention I.D.1 as reworded July 26, 1982.

NECNP I.D.2: The Applicant's proposed testing of protection systems and actuation devices fails to meet the requirements of GDC 21 and NUREG-0737, Task II.D.1. In particular, the Applicants do not provide for the testing at full power of twelve safety functions (see FSAR at 1.8-9), justify that omission, or provide for other reliable means of testing them. (Tr. at 332) (As reworded July 26, 1982.)

Petitioner explains that GDC 21 requires that actuation of safety functions be tested at power, otherwise sufficient assurance cannot be provided that it will be able to function while the reactor is operating. This is a fundamental requirement that cannot be waived by an unsupported assertion that the probability of failure at power is too low. The design of the Seabrook facility should be revised, if necessary, to allow testing at power for these necessary safety system actuations.

Applicants accepted, provided it was clear that there is no ruling now as to whether or not any of the twelve items in the original contention are in fact required. Staff had no objection to the reworded contention. NECNP Contention I.D.2 is *admitted*.

NECNP I.D.3: The applicant has not provided a reasonable assurance that the leakage detection system for the Seabrook reactor will operate when needed because not all of the system is to be tested during plant operation as required by GDC 21. Only the airborne radioactivity detector has the capacity to be tested during power operation, FSAR at 1.8-17. The applicant thereby also fails to satisfy GDC 30, which requires a development of adequate leakage detecting systems. (Tr. at 333-336) (Reworded in July 26, 1982 filing.)

Staff did not object to the reworded contention. Petitioner made the deletions suggested by Applicants. The Board *admits* NECNP Contention I.D.3 as reworded.

NECNP I.D.4: The Applicants have not complied with GDC 21 in that the Applicants indicate compliance with an outdated standard, IEEE 338-1975, which has been superseded by IEEE 338-1977. Furthermore, the Applicants improperly assert that they do not comply with IEEE 338-1975 whenever the standard

states that an action should be taken or a requirement should be met. All the provisions of the IEEE standard should be treated as mandatory unless the Applicants can show an alternative means of achieving the same level of safety. (Tr. 336-343) (Reworded in July 26, 1982 filing.)

Petitioner reworded the contention to eliminate the regulatory guide reference. The Applicants continued to object to the use of the IEEE standard as a regulatory requirement (Tr. 338) because it is not the legal standard that governs this application. Applicants indicated that the issue could be resolved at the evidentiary hearing. Tr. 340. The Staff's view was that there was enough to litigate and they had no objection to the contention as reworded on the grounds that the legal framework for it was essentially GDC 21. Tr. 342. Petitioner does not assert the IEEE standards as the standards to be met; GDC 21 has to be met. Tr. 343.

The Board *admits* NECNP I.D.4 as reworded.

NECNP I.E: *Reactor Coolant Pump Flywheel Integrity*

The Applicants have not complied with GDC 4 in that the Applicants will not perform post-spin inspections of the flywheel, have not identified the design speed of the flywheel, and tested it at 125% of that speed, and have not specified the cross-rolling ratio. Furthermore, the flywheel should be environmentally qualified under GDC 4 because it constitutes equipment important to safety. (Tr. 343-346) (Reworded as filed July 26, 1982.)

Petitioner explains that GDC 4 requires that equipment important to safety be protected from missiles. In addition, it requires that equipment important to safety be able to function when called upon to mitigate the effects of an accident. The flywheel is both a potential source of damaging missiles, and a component important to safety because it provides inertia to ensure a slow decrease in coolant flow in order to prevent fuel damage as a result of a loss of power to the pump motors.

Applicants objected to reference to the Regulatory Guide 1.14 in the original statement. Petitioner offered to reword the contention to delete this reference. Applicants indicated that the contention as reworded was close to acceptable. The Staff view was that everything up to the last sentence beginning "Furthermore" would be acceptable. The Staff is not aware of any requirement that the flywheel has to be environmentally qualified. The Staff objects to that because of a lack of basis. Tr. 345.

The Board *denies* NECNP Contention I.E as reworded because of lack of basis for the last sentence.

NECNP I.F: *Diesel Generator Qualification*

The applicants have not met the requirements of GDC 17 or Criteria III, Appendix B in that it has not indicated compliance with IEEE 323-1974. (Tr. 346-349) (As reworded July 26, 1982.)

The basis for this contention was the NRC Staff position set out in Regulatory Guide 1.9, which provides that the qualification testing requirements of IEEE 323-1974 should be used in §5.4 of IEEE 387-1977. Based on the FSAR, the Applicants have failed to do so, and they have failed to demonstrate that they have provided protections equivalent to those provided by Regulatory Guide 1.9.

Applicants object to the reworded contention on the basis that GDC 17 or Criterion III, Appendix B does not represent Commission policy decision and that IEEE 323-1974 is not a regulatory standard. The Staff considers it to be an acceptable contention in that GDC 17 does apply to the generator qualification and it is the criterion by which the Applicants' generators were reviewed. Tr. 348-349.

The Board *admits* NECNP I.F as reworded.

NECNP I.G: *Pressure Instrument Reliability*

NECNP contends that there is not reasonable assurance that the public health and safety will be protected in light of the RCS wide-range pressure instruments being utilized at Seabrook which cannot be relied upon to provide accurate information. Reliance upon the instruments could result in inappropriate operator actions or premature or late tripping of RCS pumps during the course of a small break loss-of-coolant accident (Tr. 349) (As reworded June 17, pp. 12, 13.)

Petitioner states that according to IE Information Notice No. 82-11 (April 9, 1982), qualification tests on Westinghouse-manufactured RCS pressure instruments have shown "ambiguities in their accuracy which could result in inappropriate operator action." Because the pressure instruments may provide inaccurate information leading to the exacerbation or failure to correct accident conditions, their use constitutes a threat to the public health and safety and cannot support a license for the Seabrook reactor.

Staff and Applicants have no objection to the reworded contention. The Board *admits* contention NECNP I-G as reworded.

NECNP I.H: *Decay Heat Removal*

The Applicants should be required to install additional heat exchanger capacity to allow for more rapid cool down of the facility in the event of an accident. (Tr. 349-352) (As reworded July 26, 1982 filing.)

Petitioner asserts that one of the lessons of the Three Mile Island accident was that heat exchanger capacity in nuclear power plants should be expanded and improved. This is particularly true with respect to the unexpectedly lengthy period it took to cool the TMI reactor and the need to assure effective heat exchange at high pressures.

Applicants and Staff have objected; there is no regulatory requirement for larger heat exchanger capacity at Seabrook. Petitioner noted that the basis for this contention was in Task A-45, a new unresolved safety issue described in NUREG-0705 at A-1. A critical element of this unresolved safety issue was "the adequacy of existing shutdown decay heat removal requirements." The unresolved safety issue will be addressed in the Staff's SER, not yet issued.

The Board *denies* Contention I.H. See also ALAB-687.

NECNP I.I: *Inadequate Provisions for Achieving Cold Shutdown*

NECNP contends that the Applicants must identify and environmentally qualify one path to cold shutdown as per IE Bulletin 79-01B, Supplement 3. (Tr. 353) (As reworded in July 26, 1982 filing.)

The Applicants and Staff objected to the original statement of the contention. Petitioner provided the reworded contention (Tr. 353) based on comments in the Staff's response, dated July 1, 1982, at page 21. Staff inquired as to the bases for the contention. Petitioner responded that based on the FSAR, the Applicants have not identified one environmentally qualified path to cold shutdown as required by IE Bulletin 79-01B, but have provided the capability to place and maintain the plant in a hot standby condition.

Staff explains there are several categories of issuances from the NRC Office of Inspection and Enforcement. An "IE Information Notice" puts Applicants and others on notice of certain technical requirements, but is not mandatory. On the other hand, an "IE Bulletin" is a mandatory document and while it does not have the status of a Commission regulation, it has the effect of being a requirement. It is this Board's position that an IE Bulletin may form the basis for a valid contention when the subject matter of the notice sets forth technical safety requirements. Staff reaffirmed its position that this is a valid contention.

Applicants continued to object to the reworded contention on the basis that a contention must be related to the NRC regulations. Petitioner (Tr. 356) expressed the view that the requirements derived specifically from GDC 34.

The Board *admits* Contention I.I. There is a notice from this Commission to operators of a proposed nuclear power plant that they must identify and environmentally qualify equipment in a path to cold shutdown.

NECNP I.J: *Sabotage*

10 CFR Part 73, and particularly Sections 73.40-73.55, require

the Applicant to develop and implement a plan that would effectively protect the Seabrook reactors against industrial sabotage. Regulatory Guide 1.17, Rev. 1, issued in June 1973, establishes the requirements and procedures that the NRC Staff believes would be sufficient to comply with the regulations and provide the necessary protections. NECNP contends that the Seabrook reactors are seriously vulnerable to industrial sabotage by virtue of their design and that the Applicant's security plan is inadequate to prevent actions of industrial sabotage at Seabrook that would threaten the public health and safety.

In its latest filing of July 26, 1982, Petitioner states that this contention cannot be framed until they have pursued the appropriate course of qualifying expert witnesses to review the security plan and determine its flaws. They will inform the Board shortly as to their intentions concerning the sabotage contention. Tr. 357-365.

The Board deems this contention to be *withdrawn*.

NECNP I.K: *Instrumentation for Monitoring Accidents*

The Applicant has not satisfied GDC 13, 19 and 64, as implemented by Reg. Guide 1.97. The General Design Criteria and the Regulatory Guide related to the instrumentation required to monitor plant conditions both during and after an accident. The instrumentation should be environmentally qualified.

This contention was withdrawn pending release of information from the Applicants concerning the post-accident monitoring system. Tr. 365-368.

The Board deems NECNP I.K to be *withdrawn*.

NECNP I.L: *PORV Flow Detection Monitoring System*

Applicants have not provided for a direct indication of Power Operated Relief Valve positions and, therefore, have not complied with NUREG-0737, Item II.D.3. A safety grade environmentally qualified system in compliance with GDC 4 should be installed. (Tr. 368-9) (As reworded on July 26, 1982.)

The Petitioner has stated that after TMI the NRC Staff requires the use of a positive, direct indication of valve position rather than the indirect measurement previously used. This is based on both the TMI accident experience and on IEEE 279, which "requires that, to the extent feasible and practical, protection system input shall be derived from signals that are direct measures of the desired variable." NUREG-0578, p. A-9. Contrary to these lessons and requirements, the Applicants are relying upon an indirect measure of protection system input by measuring noise rather than measuring the actual flow from the power-operated relief valves and the

safety valves. Safe reactor operation requires that the acoustic accelerometer system be replaced with a monitoring system that directly measures the flows.

Staff and Applicants agree with the rewording of this contention. The Board *admits* NECNP Contention I.L.

NECNP I.M: The Applicants' fire protection system does not meet the requirements of GDC 3 as implemented by the Commission in CLI-80-21 with respect to the following items:

- A. General Guidelines for Plant Protection**
 - 1. Building design
 - a. cable spreading rooms
 - b. floor drains
 - c. floors, walls and ceilings
 - 2. Control of combustibles
 - a. reactor coolant pump lube oil system
 - 3. Electric cable construction, cable trays and cable penetrations
 - a. cable spreading rooms
 - b. cable trays outside cable spreading rooms
 - c. control room cabling
 - 4. Ventilation
 - a. discharge of products of combustion
 - b. power supply and controls
 - c. protection of charcoal filters
 - d. stairwells
 - e. smoke and heat vents
 - 5. Lighting
 - a. fixed emergency lighting
- B. Fire Detection and Suppression**
 - 1. Detection — alarm and annunciation
 - 2. Water sprinkler and hose standpipe systems
 - a. sprinkler and standpipe layout
 - b. supervision of valves
- C. Guidelines for Specific Plant Areas**
 - 1. Primary and secondary containment — normal operation
 - 2. Control room
 - 3. Cable spreading room
 - 4. Switchgear rooms
 - 5. Remote safety related panels
 - 6. Diesel generator areas
 - 7. Diesel fuel oil storage areas

8. Safety related pumps
 9. New fuel area
 10. Spent fuel pool area
 11. Radwaste building
 12. Decontamination areas
- D. Special Protection Guidelines
1. Welding and cutting, acetylene-oxygen fuel gas systems
 2. Storage areas for dry ion exchange resins
- (Tr. at 369-373) (As reworded in July 26, 1982 filing.)

Petitioner states that the Commission's decision in CLI-80-21 requires that Applicants whose construction permit applications were docketed before July 1, 1976, demonstrate compliance with Appendix A to BTP 9.5-1 and the requirements set forth in the proposed rule, which was finalized in 45 *Fed. Reg.* 76602. According to Petitioner, the Applicants indicate in the FSAR at 1.8-43, that it does not comply with all requirements of the Branch Technical Position BTP 9.5-1. This information, which was submitted by the Applicants in 1977, is outdated, and NECNP maintains it should be revised to reflect more recent developments, including changes in BTP 9.5-1. The Applicants should be required to specify those items which are not complied with and to specify alternative means of satisfying the requirements.

The Applicants responded that CLI-80-21 does not make the Branch Technical Position or the proposed rule enforceable with regard to fire protection. Applicants contend that the materials that are in CLI-80-21 are just one acceptable way of satisfying GDC 3. The only thing that need be referred to in the contention is the General Design Criterion 3. The Staff would not object to a contention to the effect that Applicants' fire protection system does not meet the requirements of GDC 3 as interpreted by the Commission in CLI-80-21 provided they were limited to the two-page list of items in the contention as stated. This Petitioner has done.

The Board finds that NECNP has met the requirements of 2.714(b) and *admits* NECNP Contention I.M.

NECNP I.N: *Solid Waste Disposal*

The Applicant has not provided a means to handle radioactive solid waste [produced] during normal reactor operations including anticipated operational occurrences as required by GDC 60. (Tr. 374) (As reworded in June 17, 1982 filing.) (Word in brackets added by Board to make contention grammatically consistent with its basis.)

General Design Criteria 60 requires that the nuclear power unit design include means to control suitably the release of radioactive materials in gaseous and liquid

effluents and to handle radioactive solid waste produced during normal reactor operation, including anticipated operational occurrences. The Applicants should be required to specify those items which are not complied with and to specify alternative means of satisfying the requirements.

The contention was reworded taking into account comments by Applicants. The Staff does not object to this contention as reworded. The Board *admits* NECNP Contention I.N.

NECNP I.O.1: *Emergency Feedwater*

The emergency feedwater system is inadequate in that a single failure in the common discharge header, in conjunction with delayed operator action or no action to correct it, would result in a loss of feedwater to all the steam generators. The Seabrook design must be revised to provide an emergency feedwater system that is single failure-proof with respect to a rupture of the high-energy piping in the discharge header. Even if the common discharge header is not considered to be covered by the single failure criterion, the Applicant has not adequately considered the factors necessary to protect against passive steam failure. (Tr. 374-379) (As filed April 21, 1982.)

As basis, Petitioner states that the emergency feedwater system design for the Seabrook facility provides one common discharge header for all the steam generators. This system is placed under stress and pressure when the emergency feedwater system is activated. In the event of a rupture in the common discharge header, feedwater supply to all the generators would be jeopardized. Such a rupture should meet the Single Failure Criterion of Appendix A to 10 CFR Part 50. Even where systems are not specifically required to meet the Single Failure Criterion, the Applicants must consider the possibility of a single failure. At Seabrook, in the absence of prompt operator action to correct a loss of feedwater, all of the steam generators would be threatened by loss of coolant. Reliance on such operator action is unacceptable. To satisfy the Single Failure Criterion and the considerations listed in the preamble to Appendix A, the Applicants should redesign the facility to provide redundant feedwater capacity or institute automatic initiation of the emergency feedwater system.

Staff objected to the contention as not having a basis. There is no Regulatory requirement for the design change which NECNP is advocating. Staff is not aware that the discharge header has been classified as NECNP classifies it or seeks to have it classified. Contention I.O.1 is unacceptable because the design which NECNP is advocating is not a Commission requirement, but one NECNP has advocated be adopted.

Applicants state that NECNP is contending that Appendix A imposes a legal requirement that has never been imposed on any other plant before. Applicants' position is that Appendix A does not impose this requirement. It is simply not an issue for this litigation.

The Board *denies* NECNP Contention I.O.1 as not having a regulatory basis.

NECNP I.O.2: *Emergency Feedwater*

The emergency feedwater system [EFS] is inadequate in that a break in the common discharge header between valve 65 and valve 125 (See FSAR Figure 6.8-1), coupled with a single failure, would result in a loss of feedwater to all steam generators. The Seabrook design must be revised to provide an emergency feedwater system that complies with GDC 17 with respect to the high energy piping in the discharge header. (Tr. 375-379) (As reworded, p. 20, in June 17, 1982 filing.)

The basis for this contention is that the common discharge header must be qualified as pressurized because under the conditions in which it will be called upon to operate, it will be pressurized. The Applicants have not provided a reasonable assurance that the EFS will operate safely, NECNP asserts.

Applicants argue that the EFS is not high or moderate energy piping because it will not be pressurized during normal operation of the plant. During normal operating conditions, the discharge header will be empty. Only during an accident will it be filled with pressurized water. The Applicants argued that the contention lacked any regulatory basis, in that, as in Contention I.O.1, the design change NECNP would impose is not required by any regulation.

The Staff in its response of May 19, 1982 would have no objection to the litigation of a contention which provided, "the emergency feedwater system does not comply with GDC 17 in that a break in the common discharge header between valve 65 and valve 125, coupled with a loss of offsite power would result in a loss of feedwater to all steam generators" subject to one clarification. That clarification would be that NECNP specify the nature and duration of the "loss of offsite power" with respect to which it is concerned. Staff also expressed reservation as to the basis of this contention. Tr. 379. The reworded version in Petitioner's filing of June 17, 1982, did not conform with Staff's condition that it substituted "coupled with a single failure" for its reference to loss of offsite power.

The Board *denies* NECNP Contention I.O.2, as reworded, for lack of regulatory basis.

NECNP I.P: *Human Engineering*

According to Table 1.3-2, Sheet 8 of the FSAR, the Applicant has added a 0-2300 degree F multipoint recorder on the back of the main control panel. Its purpose is to record temperature at four core locations. NECNP contends that the location of this

recorder on the back of the control panel constitutes poor human engineering that would detract from the operator's ability to take prompt, correct actions in the event of an accident. (Tr. 379-382) (Original statements of April 21, 1982 at p. 37.)

This contention is based on the fact that information that may become of major interest to the operator will be available only on the back of the control panel. The operator will be required to leave his station and divert his attention from on-going events in order to determine the temperature in the core as stated on the multipoint recorder. The information should be readily available such that the operator need not move to the back of the control panel. Petitioner argued that this was a violation of GDC 19 which requires that a control room be provided from which the plant can be run safely under normal and accident conditions, and of NUREG-0737, Task I.D.1, implementing the lessons of Three Mile Island which call for reevaluation of control room design. Tr. 380.

Applicants object to this contention because there is no regulation requiring the relocation of the Multi Point recorder. The Staff states Petitioner has not shown that the location of the Multi Point recorder is a significant problem under the standard of NUREG-0737.

The actual location of the temperature recorder could not be determined at the Special Prehearing Conference. Tr. 381. By his own statement, Petitioner desires opportunity for discovery in order to really identify what exactly the location is and how the operator would or would not have to move to read it. Tr. 381.

The Board *denies* NECNP Contention I.P. on the grounds that Petitioner has not shown factual or regulatory basis for the existence of a significant safety issue.

NECNP I.Q: *Systems Interaction*

The Applicants and the Staff have not applied an adequate methodology to Seabrook to analyze the reliability of systems, taking into account systems interactions and the classification and qualification of systems important to safety to determine what sequences of accidents should be considered within the design basis of the plant, and if so, whether the design basis of the plant in fact adequately protects against every such sequence. In particular, proper systematic methodology such as the fault tree and event tree logic approach of the IREP program or the systematic failure modes and effect analysis has not been applied to Seabrook. Absent such a methodological approach to defining the importance to safety of each piece of equipment, it is not possible to identify the items to which General Design Criteria 1, 2, 3, 4, 10, 13, 21, 22, 23, 24, 29, 35 and 37 apply. Thus it is not possible to demonstrate compliance with these criteria. (Tr. 382-399) (As reworded in filing July 26, 1982, p. 7.)

Petitioner states this is one of the generic unresolved safety issues listed and described as A-17 in NUREG-0510. On October 12, 1979 the ACRS⁹ recommended with respect to the Indian Point plant and all light water reactors that the NRC study systems interactions by investigating sub-system failure within interconnected electrical or mechanical complexes and potential interactions between nonconnected systems. On March 9, 1982, the ACRS again recommended to the NRC Chairman that a walk-through systems interaction study be developed for all light water reactors to detect obvious interactions. Petitioner also contended that Applicants had not satisfied the NRC Staff questions about safety consequences of interactions between control systems at Seabrook and further that in recent state of the art review three laboratories had concluded that no single method currently exists to perform an adequate review of adverse systems interactions.

In response to Board questions regarding the history of this subject, Staff reported that it is a relatively new unresolved safety issue which is just beginning to be responded to in Staff's writing of its SER. In addition, Staff stated there is no regulatory requirement for this type of study and the contention is not specific in the sense that no specific interactions have been identified to form a basis for the contention. Tr. 393-394. Applicants agree there is no regulatory requirement.

The Board *denies* NECNP Contention I.Q. As often cited in this Memorandum and Order, the Board relies here on ALAB-687, 16 NRC 460 (1982), since the Staff's SER will not be available until the projected date of November 8, 1982.

NECNPI.R: *Hydrogen Control System* (originally filed in NECNP's filing of April 21, 1982)

The design of the hydrogen control system at Seabrook is inadequate to protect the public safety in that it would protect against the hydrogen produced by a metal water reaction involving only 1.5% of the fuel cladding. FSAR 1.8-3.

In support of its basis, Petitioner refers to the hydrogen generated during the Three Mile Island accident. In particular it referred to the Commission's statement in *Metropolitan Edison Company* (Three Mile Island Nuclear Station, Unit 1), CLI-80-16, 11 NRC 674, 1980).

Both Staff and Applicants oppose the original contention and argument in two written replies by each, and also at the prehearing conference. Tr. 399-408.

The Board denies the original contention regarding hydrogen control on the basis of these legal arguments. Particularly, in stating the basis of the original contention, the demonstration of a credible accident scenario resulting in hydrogen releases above the limits contemplated by regulation is lacking.

⁹ Advisory Committee on Reactor Safeguards.

Being denied the original contention, Petitioner seeks a ruling on the alternative hydrogen control contention presented on pages 24-25 of their filing of June 17, 1982. Tr. 399-407.

NECNP I.R: *Hydrogen Control (Alternative)*

NECNP contends that the hydrogen control system at Seabrook is inadequate to protect the public health and safety in that it would protect against the hydrogen produced by a metal water reaction involving only 1.5% of the fuel cladding and in that the the manual operation of the hydrogen recombiners and other hydrogen control equipment has not been demonstrated to be adequate to assure that large amounts of hydrogen can be safely accommodated without a rupture of the containment and a release of substantial amounts of radioactivity into the environment.

As a credible accident scenario, NECNP asserts the following:

1. A pipe break in the reactor coolant pressure boundary causes LOCA, as defined by 10 CFR 50.46(c)(1).
2. Failure of the ECCS to maintain coolant inventory. The cause of this failure may be: electrical or mechanical component failure; common mode failures resulting from the LOCA; design deficiencies which undermine ECCS effectiveness; and/or operator error.
3. The Zircaloy fuel cladding melts; the zirconium reacts with water, liberating hydrogen gas.
4. The hydrogen concentration within the containment increases to the flammability limit before the combustible gas control system becomes effective, or said system never operates effectively.
5. Uncontrolled hydrogen-oxygen reaction (explosion) occurs.
6. Containment is breached; a substantial fraction of the core inventory is released to the atmosphere, resulting in offsite doses at the LPZ (low population zone) boundary which exceed the 10 CFR 100.11 guidelines of 25 rems whole body and 300 rems thyroid.
7. This accident scenario should be construed as a TMI-2 type LOCA, with similar or equivalent hydrogen generation and explosion potential.

Petitioner states the crucial safety issue as being whether the hydrogen can be adequately controlled. The accident at Three Mile Island demonstrated that as much as 50 percent of the zirconium cladding in the TMI core reacted chemically to produce hydrogen, an amount greatly in excess of the design assumptions of 10 CFR 50.44.

Staff and Applicants do not accept the accident scenario given in the alternative contention as credible. Applicants state that the accident scenario is a general description of a LOCA plus ECCS failure, not a basis for a credible accident. Staff

states that Petitioner must show that the hydrogen generation scenario is, in fact, credible, that hydrogen control measures will not be successful and that offsite releases will exceed the guideline values of 10 CFR Part 100. The Staff would admit the contention for discovery purposes only to provide an opportunity to make the above determinations.

There was considerable discussion of this contention in written replies and during the special prehearing conference at Tr. 399-408. Some of this discussion centered about the interpretation of the Commission Policy Statement regarding the hydrogen issue given in *Metropolitan Edison Company* (Three Mile Island Nuclear Station, Unit 1), CLI-80-16, 11 NRC 674 (1980). To clarify the disagreements expressed about the interpretation of this Commission Policy Statement, the Board believes it will be beneficial to state it below with emphasis added on pertinent parts. In its ruling the Commission declined to waive or except the hydrogen generation provisions in 10 CFR §50.44. This regulation limits the amount of hydrogen, generated during the course of a loss-of-coolant accident, to hydrogen associated with a five percent metal-water reaction. It must be taken into account in the design of nuclear reactor containment systems. The Commission, in its Memorandum and Order in the Three Mile Island Unit 1 case stated:

The Three Mile Island accident has in fact raised a safety issue regarding hydrogen control measures following a loss-of-coolant accident that should be addressed. The Commission believes that, quite apart from 10 CFR 50.44 hydrogen gas control could properly be litigated in [the Three Mile Island Nuclear Station, Unit No. 1] proceeding under 10 CFR Part 100. Under Part 100, hydrogen control measures beyond those required by 10 CFR 50.44 would be required *if it is determined that there is a credible loss-of-coolant accident scenario entailing hydrogen generation, hydrogen combustion, containment breach or leaking, and offsite radiation doses in excess of Part 100 guideline values.* The design basis assumptions of 10 CFR 50.44, following a loss-of-coolant accident is dependent on ECCS design as opposed to actual ECCS operation, do not constrain the choice of credible accident sequences used under 10 CFR 100.11(a) *Union of Concerned Scientists v. AEC*, 499 F.2d 1069, 1090 (D.C. Cir. 1974). Thus we answer the second certified question in the affirmative. [Emphasis Added]

We answer the first certified question in the negative. We are of course aware that the Three Mile Island accident resulted in hydrogen being generated far in excess of the hydrogen generation design basis assumptions of 10 CFR 50.44. This was because the operator interfered with actual ECCS operation with the result that the safety system did not operate as designed and as 50.44 assumed it would operate. However, this is a safety issue that is not peculiar to Three Mile Island Unit 1 — it is an issue that is common to all light water power reactors because operators generally have

the physical capability to interfere with automatic ECCS operation. The proper response to this issue is not waiver of the rule under 10 CFR 2.758 because this case presents no "special circumstances" but rulemaking to either amend or suspend the present rule. *The Commission is planning a broad rulemaking proceeding that will address the general question of possible safety features to deal with degraded core conditions.* This rulemaking proceeding will include measures to deal with hydrogen generation following a loss-of-coolant accident. [Emphasis Added]

. . . the hydrogen control issue can be litigated under 10 CFR Part 100. Under Part 100 the likelihood of an accident entailing generation of substantial (in excess of 10 CFR 50.44 design basis) quantities of hydrogen, the likelihood and extent of hydrogen combustion, and the ability of the reactor containment to withstand any hydrogen combustion at pressures below or above containment design pressure would all be at issue. A critical issue here would be the likelihood of an operator interfering with ECCS operation.

However, after the Three Mile Island accident the Staff has given licensees explicit instructions not to turn off prematurely the ECCS system. As noted above, it was operator interference with ECCS operation that was the root cause of the hydrogen generation problem at Three Mile Island Unit 2. In our view this instruction, which had not been issued when 50.44 and General Design Criterion 50 were promulgated, *compensates for the less conservative analytical framework of Part 100, and serves as a basis to sustain the present hydrogen generation assumptions of 50.44 at least for the interim until the degraded core rulemaking can be completed.* 11 NRC at 675-6. [Emphasis Added]

The Board takes official notice of a letter issued by the Commission July 27, 1982, regarding the McGuire Operating License Proceeding and ALAB-669. The Commission declined to review the Appeal Board decision, in *Duke Power Company* (William B. McGuire Nuclear Station, Units 1 and 2), ALAB-669, 15 NRC 453 (1982), and the McGuire decision became final agency action July 15, 1982. The McGuire operating license decision was based, in large part, on reference to CLI-80-16, the Commission's policy statement on hydrogen control.

The McGuire Operating License Board limited its scope to consideration of credible accidents. The degraded core rulemaking was viewed as providing a forum for the treatment of other accidents.

The Commission has provided guidance with these rulings.

The interpretation is that Petitioner must prove the credible accident that will give rise to the production of excessive hydrogen—the credible condition wherein the core is inadequately cooled for a sufficient period of time. Petitioner is considered to have the burden to establish a credible accident scenario involving hydrogen production resulting in offsite doses in excess of 10 CFR Part 100 limits.

Part 100 is a siting regulation, and it establishes radiation limits at a certain boundary from the plant surrounding the "exclusion" area. These radiation exposure limits are 25 rem to the whole body or 300 rem to the thyroid from iodine exposure.

The Board is not persuaded that the scenario in the alternative contention is credible for the Seabrook reactor. The Board *denies* NECNP Alternative Contention I.R on hydrogen generation and control for litigation.

NECNP I.S: *Loose Parts Detection System*

The Applicants have not yet designed or developed a loose parts detection system for the reactor's primary system and, therefore, do not satisfy criteria 1 and 13 of Appendix A to 10 CFR Part 50, 10 CFR 50.36, or 10 CFR 20.1(c). (Tr. 409) (As reworded in filing of July 26, 1982.)

Petitioner gives as basis Regulatory Guide 1.133 which describes an acceptable method to implement NRC requirements with respect to detecting potentially safety-related loose parts in light water cooled reactors during normal operation. By complying with Regulatory Guide 1.133 an applicant will satisfy the NRC Staff that Criteria 1 and 13 of 10 CFR Part 50, §50.36 of 10 CFR Part 50, and Paragraph 20.1(c) of 10 CFR Part 20 have been met.

Staff has no objection to this contention as reworded.

Applicants object and argue that neither 10 CFR §20.1(c) nor 10 CFR §50.36, Technical Specifications, by its terms requires a loose parts detection system. It is viewed as a new device thought by some to be a good thing to have. The principal regulatory requirement is said to come from Regulatory Guide 1.133 and Applicants object to giving a regulatory guide the dignity of a regulation.

The Board *denies* NECNP Contention I.S as reworded on July 26, 1982. There is no regulatory requirement for litigating a loose parts detection system. Unless the Petitioner qualifies the need for such a system on a firmer ground than a Regulatory Guide then it cannot expect this Board to accept the contention, for so doing would be to place a new requirement on the Applicants.

NECNP I.T: *Steam Generators*

The Applicant has not demonstrated that the Seabrook steam generators are capable of resisting degradation or that the new model F Westinghouse generators have been designed to solve the degradation problem and maintain their integrity during normal operation and during a credible accident scenario, such as the accident which occurred at GINNA on January 25, 1982. (Tr. 410-418) (As filed April 21, 1982, p. 47.)

Petitioner describes the history of previous problems with Westinghouse steam generators as causing concern. The new Model F to be used at Seabrook although

not yet showing any failures is still a Westinghouse product which has had past failures and this is sufficient enough to buy the Petitioner discovery to determine what the story is with the Model F as it relates to its predecessors.

It is the Staff view that this contention lacks basis and specificity, and is speculative. Tr. 414. The specific information should relate to the Seabrook plant. Applicants stated the contention should not be admitted for similar reasons.

The Board *denies* NECNP Contention I.T. There is nothing in Petitioner's arguments, either written or oral, that places parties on notice that there is something wrong with Model F steam generators at Seabrook. The Board agrees with Staff that this contention is speculative.

NECNP I.U. *Turbine Missiles*

The Applicants have not demonstrated that they meet GDC 4 of Appendix A to 10 CFR Part 50 in that they have not provided that structures, systems, and components important to safety be protected against the effects of turbine missiles whose launching might occur as a result of equipment failure. (Tr. 418 with corrections to transcript) (As reworded in filing of July 26, 1982.)

Petitioner states that the Applicants have failed to demonstrate in §3.5.1.3 of the FSAR that the Seabrook plant has an acceptable alternative method to meet GDC 4, or that it has met Regulatory Guide 1.115 which provides an acceptable method to comply with GDC 4. Figure 3.5.1 of the FSAR illustrates how certain low-trajectory missiles resulting from turbine failure could severely harm the containment of one or both of the two Seabrook plants.

Staff and Applicants had no objection to the contention as reworded. The Board *admits* Contention NECNP I.U.

NECNP I.V. *In-Service Inspection of Steam Generator Tubes*

The Applicants have not demonstrated that they have met GDC 14, 15, 31 and 32 insofar and to the extent that those GDC require a program of the in-service inspection of steam generator tubes. (Tr. 419-420) (As reworded in filing of July 26, 1982.)

Petitioner notes that in-service inspection of steam generators has been demonstrated historically to be inadequate to prevent their degradation and resulting accidents due to this degradation. The Applicants have stated only that it fully meets all requirements of Regulatory Guide 1.83, which according to the Petitioner, is an inadequate standard for assuring compliance with General Design Criteria 14, 15, 31, and 32 of Appendix A to 10 CFR Part 50. Reference is made to a recent steam generator failure at the Ginna plant as evidence of insufficiency of the standard set forth in Regulatory Guide 1.83. Tr. 420.

The rewording was suggested by Applicants. Staff objects to the rewording on the basis that it is not specific. It does not say how the inspection program is inadequate. There is no basis for the contention in the absence of the showing that the Applicants who will comply with the Regulatory Guide will not meet the applicable general design criterion. Tr. 420. Applicants affirm that they will comply with the Regulatory Guide as they stated in the FSAR, and Petitioner states that an inspection program performed in accordance with that Regulatory Guide would not satisfy it.

The Board *denies* Contention NECNP I.V. Regulatory guides are not mandatory but when an applicant voluntarily accepts one as a method of complying with GDC, then a Petitioner cannot be permitted to argue that this one method of complying with this Commission's requirements would not be sufficient to meet its demands.

NECNP I.W. *Seismic Qualification of Electrical Equipment*

The Applicants have not demonstrated that they have adequately assured the seismic qualification of electrical equipment at Seabrook as required by criterion III, "Design Control," of Appendix B to 10 CFR Part 50. (Tr. at 421) (As reworded in filing of July 26, 1982.)

For a basis, Petitioner notes that according to FSAR 1.8-36, the Applicants have not demonstrated that all NSSS safety-related electrical equipment or BOP electrical equipment has been seismically qualified to meet all requirements of Regulatory Guide 1.100, Rev. 1. In a letter to the NRC the Applicants state that qualification of electrical equipment and instrumentation complies with the guidelines of Regulatory Guide 1.100. Because of this conflict between the statements the Applicants must demonstrate that their method of seismically qualifying electrical equipment at Seabrook fully complies with Criterion III of Appendix B to 10 CFR Part 50. Seismic Qualification of Equipment is an Unresolved Safety Issue listed as A-46 of NUREG-0705.

Petitioner has omitted the last sentence of the original contention and this complies with Applicants' objection. Petitioner wants the contention to apply to both electrical systems and components and notes that the seismic qualification program is still under review by the Staff. This includes a supplementary report on the resolved safety issues. Until this is complete, they are unable to identify individual components that are in issue.

The Board *denies* NECNP Contention I.W. *See also* ALAB-687.

II. Quality Assurance Contentions

A. *Design and Construction*

II.A.1: General Design Criterion I of Appendix A to 10 CFR Part 50 requires the establishment and implementation of a quality assurance program. This and all General Design Criteria cover all aspects of the facility that are "important to safety." NECNP contends that the Seabrook Quality Assurance Program for design and construction has been too narrow in scope, applying only to items considered to be "safety-related," rather than to the broader category of aspects that are "important-to-safety." Accordingly, the Applicant has failed to comply with GDC I to Appendix A. (Tr. 425-429) (As worded in April 21, 1982 filing, p. 55.)

The Applicants' quality assurance (QA) program was litigated at the construction permit stage. Petitioner notes that the interpretation of Appendix B to 10 CFR Part 50 on which the Seabrook QA program was based was recently reviewed by the Commission and found wanting with respect to major safety-related systems and components such as the in-core instrumentation, reactor coolant pump motors, reactor coolant power cables, and radioactive waste system, pumps, valves and storage tanks. Petitioner claims that these systems or components are not covered by the Seabrook QA program. Petitioner also claims that all equipment that removes heat from the steam generators during shutdown should be subject to the QA program. It has been identified as a new unresolved safety issue.

Applicants comment on both quality assurance contentions 1 and 2 that they are not litigable for at least two reasons. The first is that they have already been litigated in the construction permit stage. The second is that this is an operating license case, not a construction permit case, and if there are deficiencies in the construction QA plan, they are not within the jurisdiction of this licensing Board. If the Petitioner wishes to litigate the sufficiency with which the Applicants have executed the plan, the remedies have to do with the construction permit and again it is not within the jurisdiction of this Operating Licensing Board. This has been recognized QA *Consumers Power Company* (Midland Plant, Units 1 and 2) ALAB-674, 15 NRC 1101 (1982).

Staff commented on the scope of the QA program and its acceptability at the construction permit stage by the Licensing Board presiding over that portion of the license. Applicants' QA program was found to meet NRC requirements. (LBP-76-26, 3 NRC 857 at 866-867 (1976). NECNP was a party to that proceeding and in the absence of either significant supervening developments having a possible material bearing upon those previously adjudicated issues, or the presence of some unusual factors having special public interest applications, NECNP is estopped

from raising the issue in the operating license proceeding. Petitioner has failed to demonstrate or meet either of these factors.

The Board *denies* Contention II.A.1 on the basis that it was litigated during the construction permit phase.

NECNP II.A.2: *Quality Assurance — Design and Construction*

NECNP contends that the Applicants have failed to meet the requirements of Appendix B with respect to the design and construction of Seabrook in the following areas such that there is no assurance that the plant has been designed or constructed in accordance with applicable requirements and consistent with the public health and safety:

1. Acceptance of deficient conditions through apparent oversight or incompetence of inspectors. I&E Report Nos. 79-05, 79-07, 79-10, 80-06, 80-10, 80-01, 81-09, 81-12, 80-13, 82-1.¹⁰ Appendix B, Criteria II, V, X, XIV.
2. Acceptance of deficient conditions as a result of inadequate or nonexistent Quality Assurance procedures. I&E Report Nos. 80-06, 80-04, 80-11, 81-01, 81-02, 81-03, 81-05, 81-07, 79-07, 79-06. Appendix B, Criteria II, V, XIV.
3. Failure to perform required inspections. I&E Report Nos. 79-06, 80-03. Appendix B, Criteria V, X.
4. Falsification of inspection record to show inspection was properly performed when it was not. I&E Report No. 79-06. Appendix B, Criteria II, X.
5. Failure to prevent deficiencies in pipe supports, pipe welds, and piping and tubing generally. I&E Report Nos. 80-06, 80-10, 81-03, 81-05, 81-14, 79-06. Appendix B, Criterion V.
6. Failure to determine the root causes of deficiencies or to assure that corrective actions are taken to prevent deficiencies from recurring. I&E Report Nos. 79-06, 79-09, 80-03, 80-11, 80-12, 81-03. Appendix B, Criterion XVI.
7. Failure to assure proper design. I&E Report Nos. 81-14, 81-05. Reports pursuant to 10 CFR 50.55(e),

¹⁰ All I&E Reports will be identified by reference to the report number for Unit 1, Docket No. 50-443, except as otherwise noted.

- dated 10/27/78, 12/6/79 (three reports), 12/1/80, 7/17/81, 1/15/81, 2/23/81, 6/18/81, 8/25/81. Appendix B, Criteria III, V.
8. Failure to assure proper repairs. I&E Report Nos. 79-07, 80-04, 80-11, 80-12. Appendix B. Criteria V, IX, X.
 9. Failure to assure deficiencies are not caused by poor contractor interface. I&E Report Nos. 80-11, 80-12, 81-12, 82-01. Appendix B, Criterion V.
 10. Failure to assure the procurement of proper materials and failure to assure that procured items comply with all requirements. I&E Report Nos. 81-09, 81-12. Appendix B, Criteria V, VII, XV.
 11. Failure to assure proper document control such that required changes are not made, and incorrect procedures and specifications are used. I&E Report Nos. 79-06, 80-03, 80-04, 80-11. Report pursuant to 10 CFR 50.55(e), dated 12/6/79. Appendix B, Criteria II, III, V, VI.
 12. Pervasive deficiencies in welding and weld repairs. I&E Report Nos. 79-06, 79-07, 79-10, 80-03, 80-11, 80-10, 81-01, 81-03, 81-05, 81-09, 80-04, 80-12. NRC Stop Work Order in letter dated 12/22/80. Appendix B, Criteria V, IX, X.
 13. Inadequate audit program and inadequate commitment to and understanding of Quality Assurance. I&E Report Nos. 79-08, 78-06, 80-05, 81-12, 80-09, 78-16. Appendix B, Criteria I, II, XIII, XVIII.

(Tr. 429-452) (As filed July 26, 1982.)

NECNP has provided 13 examples of the I&E Reports which cite the Applicants for QA deficiencies. They contend that these failures provide a basis for a contention that the entire QA program is faulty, must be examined by the Board, and that discovery is needed to provide additional particulars.

Applicants took the position that one must distinguish between execution of a QA program as one topic and the compliance of as-built machinery with to-be-built plans and specifications. What matters is to determine whether or not the plant as built meets the statutes and regulations of the NRC. Tr. 448.

Staff pointed out that Quality Assurance deficiencies have been litigated in many operating license proceedings. The Staff feels that the contention should be limited to the specific alleged failures of the QA program. Tr. 431, 432. Staff offered a rewording of the contention at Tr. 432. The final version submitted by NECNP in its filing of July 26th is different. The Staff objects to the restated

contention to the extent that it continues to include design issues and they feel that those issues are not proper in an operating license proceeding. The Staff takes the position that if the word "design" continues to be included, the contention is clearly not acceptable for litigation.

The Board *rejects* NECNP II.A.2. The thrust of NECNP's contention is the design of the plant. Clearly the design is not up for litigation in this proceeding. NECNP, although afforded more than one opportunity to bring its QA contention into line, had elected to continue to press for acceptance of design issues.

B. Operations

NECNP II.B.1: *Quality Assurance for Operations*

FSAR addresses Quality Assurance for plant operation at Section 17.2. Section 17.2 fails to address each of the criteria in Appendix B in sufficient detail to enable an independent reviewer to determine whether or how all of the requirements of Appendix B and the guidance in all applicable regulatory guides will be satisfied. (Tr. 453) (As reworded in filing of June 17, 1982.)

Petitioner gives as the basis the language of Section 17.2 of the FSAR which has only a very general discussion of the Quality Assurance Program, with scattered references to procedures. The FSAR does not provide the detail necessary to determine how the program will be implemented.

Applicants have no objection to Contention II.B.1. Staff accepts the rewording of Contention II.B.1 as representing its suggested limitation to Section 17.2.

The Board *admits* the NECNP II.B.1 as reworded, above.

NECNP II.B.2: The Quality Assurance Program for Operations extends only to matters considered to be "Safety-related," and not to all structures, systems, and components important to safety. (Tr. 452-454) (As filed April 21, 1982, p. 62.)

Petitioner states that the basis is the comparison between the scope of the Seabrook Quality Assurance Program for operations and the requirements of GDC 1 of Appendix A.

Staff objects to II.B.2 on the grounds that it lacks specificity in that petitioner has not given a list of items it contends were excluded from the QA program. Petitioner stated it gave some examples on page 36 of its June 17th filing but these do not appear in the statement of the contention. Tr. 453.

The Board *denies* NECNP-II.B.2 on the basis that, as stated, it lacks specificity.

NECNP II.B.3: The Quality Assurance Organization does not have the independence required by Appendix B, Criterion 1. (Tr. 454) (As filed April 21, 1982, p. 62.)

Petitioner gives as basis the fact that the Nuclear Quality Manager reports to the Vice President — Production on an equal basis with the Nuclear Production Superintendent, rather than to the Executive Vice President — Engineering and Production. Since the Vice President — Production is directly responsible for maximizing the amount of power produced by Seabrook, the quality assurance organization must report to a separate-but-equal level or a higher level in order to assure its independence and freedom of operation.

The record indicates that Staff and Applicants do not object. The Board *admits* NECNP-II.B.3.

NECNP II.B.4: The Quality Assurance Program for operations as described in the FSAR does not demonstrate how the Applicants will assure that replacement materials and replacement parts incorporated into structures, systems, or components important to safety will be equivalent to the original equipment, installed in accordance with proper procedures and requirements, and otherwise adequate to protect the public health and safety. Similarly, the Quality Assurance program does not assure or demonstrate how repaired or reworked structures, systems, or components will be adequately inspected and documented in “as-built” drawings. (Tr. 454) (As filed April 21, 1982, p. 63.)

Petitioner gives as basis the fact that the FSAR contains no discussion whatsoever of Quality Assurance for maintenance, repairs, or rework, all of which will occur during the life of the plant, and cites Appendix B to 10 CFR Part 100, and 10 CFR §50.34(b)(6)(ii), as well as GDC [1] in Appendix A to 10 CFR Part 50, as stating the regulatory requirements. NECNP pleadings dated April 21 and June 17, 1982.

Staff comments that Petitioner has failed to satisfy either the basis or specificity requirements of 10 CFR §2.714. Petitioner, in pleading of June 17, p. 37, reads Appendices A and B as providing a requirement for having a quality control program for maintaining and repairing defective equipment, inspecting the results of such actions, and keeping accurate records throughout the life of the unit which may be as long as forty years. The Staff continued to object after this explanation was given.

The Board *admits* NECNP II.B.4. It is the Board’s understanding of NECNP’s contention herein that the basis is the absence of the contended items in the FSAR.

NECNP II.B.5: The Quality Assurance program for operations as described in the FSAR fails to assure the presence on the operating staff of an adequate number of qualified QA/QC personnel, particularly during off-shifts. (Tr. 455) (As filed April 21, 1982, p. 63.)

Petitioner gives as basis the absence of any discussion in the FSAR of minimum staffing levels or any indication that sufficient Quality Assurance staffing will be assured at all times.

Staff and Applicants had no objection. NECNP Contention II.B.5 is *admitted*.

III. Emergency Planning Contentions (Tr. 455-535)

The original filing by NECNP on April 21, 1982 was:

NRC regulations require the license Applicant to submit with its FSAR a complete emergency plan before a license may be issued. 10 CFR 50.34(b)(6)(v). The plan must be "adequate and capable of being implemented," providing a "reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency." 50.54(a)(1),(2). The emergency plan submitted by the Applicant for the Seabrook facility license is seriously deficient in a number of respects listed below, and fails to provide all the information required by Appendix E to Part 50. In its present form, the plan is incapable of being implemented or providing any assurance that in the event of an emergency adequate measures can and will be taken, and therefore it cannot be accepted as fulfillment of a licensing requirement under 10 CFR 50.47.

This was followed by 16 items of specification and basis (pp. 66-77).

In response to the objections of the Applicants and the Staff, NECNP revised its contention on June 17, 1982 in the following manner: used the wording proposed by the Applicants as a general statement of the contention, and each of the sixteen items listed in the original contention as "specificity and basis" now constitute separate subparts of the contention which NECNP asserts must be individually addressed.

During the Special Prehearing Conference of July 15-16, 1982, the Board directed NECNP to file any redrafted emergency planning contentions and any argument that it may have with respect to those contentions. These were filed on July 23, 1982. Each of the 16 subparts of the previous emergency planning contentions were redrafted into proper contention form. Subcontention 2 was incorporated into subcontention 1 and all were renumbered, 1-15.

The Board's view of the status of and ruling on all emergency planning contentions is given below under MASS.¹¹ Accordingly, NECNP Contentions 1-15 dealing with emergency planning are *denied*. See also ALAB-687.

IV. Blockage of Coolant Flow to Safety-Related Systems and Components by Buildup of Biological Organisms

The Applicant must establish a surveillance and maintenance program for the prevention of the accumulation of mollusks, other aquatic organisms, and debris in cooling systems in order to satisfy the requirements of GDC 4, 30, 32, 33, 34, 35, 36, 38, and 39, which require the maintenance and inspection of reactor cooling systems. The design, construction, and proposed operation of Seabrook fail to satisfy these requirements. (Tr. 493-496) (From filing of June 17, 1982.)

The contention is based on the assumption that the Atlantic Ocean and the cooling water tunnels are a system essential to safety. Applicants stated that the issue had previously been litigated in the construction permit phase. There is an ultimate heat sink at Seabrook that is something other than the Atlantic Ocean. A special cooling tower was built for this purpose. The water that is used to cool during an accident sequence may come from the Atlantic Ocean but it is not necessary that it come from the ocean. Applicants repeated that the cooling tunnels are not a safety grade system and the issue was litigated in the construction permit case. Staff agrees with this. Tr. 496.

The Board *denies* NECNP Contention IV. The contention lacks basis and this cooling system authorized by the CP was litigated to a conclusion at that time.

V. NEPA Cost-Benefit Analysis

The evaluation of costs and benefits under NEPA which, at the construction permit stage, was found to weigh in favor of completing the Seabrook facility, was inaccurate in that the costs associated with the back end of the nuclear fuel cycle were not given sufficient consideration. The Table S-3 Rule, used by the Commission in its cost/benefit analysis to assess the costs associated with the reprocessing, storage and disposal of spent fuel and other nuclear wastes was recently invalidated by the D.C. Circuit

because they fail to allow for proper consideration of the uncertainties concerning the long-term isolation of high-level and transuranic wastes, and because they fail to allow for proper considera-

¹¹ See pp. 1077-79, *infra*.

tion of the health, socioeconomic and cumulative effects of fuel-cycle activity.

Natural Resources Defense Council v. Nuclear Regulatory Commission, 685 F.2d 459, 467 (D.C. Cir. 1982).

When an earlier S-3 Table was invalidated by the same court, the Appeal Board halted construction of the Seabrook plant based on the invalidity of the cost-benefit analysis. *Public Service Company of New Hampshire* (Seabrook Station Units 1 and 2), ALAB-349, 4 NRC 235, 271, (1976). Now the cost-benefit balance must be restructed once again, considering fully the costs associated with the back end of the fuel cycle. NECNP contends that the costs of the project far outweigh the benefits to be afforded, and that therefore NEPA requires either complete abandonment of the Seabrook facility or the substitution of less costly alternatives. In any event, an operating license may not be issued for the Seabrook facility in the absence of a valid Environmental Impact Statement addressing the back end of the fuel cycle. (Tr. 496-499) (Received by Board July 19, 1982.)

Petitioner provides as basis that the National Environmental Policy Act requires the preparation of an environmental impact statement for every major Federal action significantly affecting the quality of the human environment, which includes a discussion of "any adverse environmental effects which cannot be avoided should the proposal be implemented." 42 U.S.C. 4332(C). In the case of licensing nuclear power plants, adverse impacts include the impacts of the nuclear fuel cycle. *Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 539 (1978).

Petitioner further asserts that the Court of Appeals for the District of Columbia Circuit recently invalidated the S-3 Table used by the NRC in the Seabrook construction permit proceeding to give values to the costs associated with the back end of the nuclear fuel cycle. The court found the rule to be invalid in that it failed to account for uncertainties regarding the safe long-term disposal of nuclear wastes, and because it did not include consideration of health, socioeconomic, or cumulative effects. NECNP claims that the court's rejection of the S-3 Table nullifies the original cost-benefit analysis for Seabrook and that the original analysis must be done again. NECNP believes that for several reasons, a new cost-benefit analysis for the Seabrook facility would yield different results than the original analysis.

The contention is based on the recent decision (April 27, 1982) of the U.S. Court of Appeals for the District of Columbia. The Staff noted that the Commission is planning to issue a policy statement soon. Staff and Applicants recommend that action on this contention be deferred until the Commission statement of policy is published. Applicants stated the mandate had not been issued by the court.

Petitioner urged that the contention not be deferred, that it be admitted pending the completion of the Federal court decision and action by the Commission. Tr. 497.

The Board *denies* NECNP Contention V. Technically, Table S-3 is still valid and this contention constitutes an impermissible contention.

COMMONWEALTH OF MASSACHUSETTS (MASS) (Petitioner under 10 CFR §2.714)

MASS¹² submitted a supplement to its petition to intervene on April 20, 1982 with four contentions, all in the general subject area of emergency planning. It noted that much of the data relevant to the issue were not yet available, including State and local emergency plans, the FEMA review and the results of the emergency planning exercise. MASS therefore requested leave to submit more complete contentions at a later date.

MASS-1: Applicants have failed to submit, as required by 10 CFR §50.33(g), radiological emergency response plans of state and local governmental entities within the plume-exposure pathway or ingestion pathway emergency planning zones, including plans of the Commonwealth of Massachusetts and its municipalities.

In its filing of July 22, 1982, MASS *withdrew* Contention MASS-1. The Board grants leave to refile at a later date with more basis and specificity as additional plans and reports are issued regarding Emergency Plans. MASS Contentions 2, 3 and 4 were resubmitted on July 22, 1982 with wording identical to previous submissions of April 20, 1982.

MASS-2: The Applicants have failed to account for local emergency response needs and capabilities in establishing boundaries for the plume exposure pathway and ingestion pathway EPZ's for Seabrook station, as required by 10 CFR §50.33(g) and §50.47(c)(2).

MASS-3: There is no basis for the NRC to find, as required by 10 CFR §50.47(a)(1), that the state of onsite and offsite emergency

¹² Subsequent to the close of PHC-II, MASS filed *Brief of the Commonwealth of Massachusetts in Support of Its Contentions* on July 23, 1982. Applicants filed a Motion for Leave to Reply to MASS *Brief and Applicants' Reply To "Brief of the Commonwealth of Massachusetts in Support of Its Contentions"* on August 5, 1982. Finally on August 11, 1982, MASS filed a Motion for Leave to Respond to Applicants' Reply and a *Response of the Commonwealth of Massachusetts to "Applicants' Reply to Brief of the Commonwealth of Massachusetts in Support of Its Contentions."* This Board accepts MASS' Brief of July 23, 1982 and grants the Motion of Applicants for leave to file a response to MASS' brief but denies MASS' motion to file a Response to Applicants' Reply. The Board did request (Tr. 649) the Brief from MASS at the PHC-II and a rebuttal is appropriate. However, there must be an end to the pleadings this Board will accept. *Hic labor finit.*

preparedness for the Seabrook station provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

MASS-4: The Applicant's emergency plan does not satisfy the standards set forth in 10 CFR §50.47(b) or provide the information required by 10 CFR 50 Appendix E.

Applicants and Petitioners urge the start of discovery as soon as possible. Instead of the above statements of contentions, Applicants recommend the admission of a single contention worded:

The Applicants have not complied with 10 CFR §50.33(g), 10 CFR §50.47, and 10 CFR 50, Appendix E (Tr. 283).

Staff objects to all of MASS Contentions (Tr. 475) asserting that: (1) it permits the admission of contentions for discovery purposes which would not otherwise be admissible under §2.714; and (2) it will set a different standard for the admission for discovery purposes of Emergency Planning Contentions than any other contentions the Board is considering. It lowers and sets a different standard for admission of contentions. Tr. 477. Staff further takes the position that only specific contentions should have been filed at this point. For contentions based on documents that are not yet in existence, contentions should be deferred until such time as the appropriate document(s) have been prepared. Discovery then can follow which will be more meaningful. Tr. 518.

FEMA¹³ plays an important role in determining emergency plans and its role was described by Staff counsel at the PHC-11. Tr. 527, *et seq.* Staff counsel reported that, in conversation with FEMA on July 16 during the Special Prehearing Conference-II, FEMA opposed broad-based emergency planning contentions. FEMA urged the Board to treat Emergency Planning Contentions by the Rules under §2.714. As of this time, the final State and local plans will not be submitted to FEMA for their review until early December 1982. FEMA proposed that the discovery process not go on without specific plans or contentions in hand. A broad-based kind of contention, even with specific subparts that could have been contentions, had they been admitted, would encumber FEMA's planning process. FEMA urged the Board not to permit discovery now. Tr. 527.

The Board gives weight to the Staff and FEMA positions and denies MASS (and other Petitioners') contentions regarding off-site emergency plans at this time, granting leave to resubmit or reframe their contentions at a later date should they choose to do so, with appropriate basis and greater specificity possible when the additional plans and reports are issued, provided contentions are filed shortly after issuance of the plans or reports. The Board views these emergency contentions of

¹³ Federal Emergency Management Agency.

MASS as premature. Upon the filing of the FEMA report, MASS and other Intervenor will be permitted to refile emergency planning contentions based on the newly filed documents. *See also* ALAB-687.

Accordingly, MASS Contentions 2-4 are *denied*.

The Board grants MASS standing in the proceeding at this time under 10 CFR §2.715(c).

An additional factor needs to be noted here for an understanding of this Board's action in regard to the Commonwealth of Massachusetts as an Intervenor under 10 CFR §2.715(c). The Commission in *Public Service Company of Indiana* (Marble Hill Nuclear Generating Station, Units 1 and 2), CLI-80-10, 11 NRC 438, 439 (1980), emphasized that the participation of an interested sovereign state, as a full party or otherwise, is always desirable in the NRC process. Under §2.715(c), the interested State or other government body need not furnish contentions or take a position on the issues. The State is nevertheless given an opportunity to introduce evidence, interrogate witnesses, and advise the Commission. The State may also file proposed findings and exceptions, and petitions for review by the Commission. This section does provide that the presiding officer may require that the State indicate with reasonable specificity, in advance of hearing, the subject matters on which it desires to participate. This, MASS has done in filing its four contentions with this Board. Once admitted to the proceeding, an interested State must comply with all the procedural rules and is subject to the same requirements as other parties appearing before the Board. *Gulf States Utilities Company* (River Bend Station, Units 1 and 2), ALAB-444, 6 NRC 760 (1977).

SEACOAST ANTI-POLLUTION LEAGUE (SAPL) (Intervenor under 10 CFR §2.714)

SAPL moved to become an Intervenor in this proceeding on November 13, 1981 and supplemented its petition with affidavits of two members of SAPL, dated February 4, 1982. In response to the Board's Memorandum and Order setting a special pre-hearing conference to begin May 6, 1982, SAPL submitted four contentions in its filing dated April 5, 1982. Applicants and Staff responded in writing to this filing and oral presentations of the parties were made on the record of the May 6th prehearing conference. Tr. 14-45; 132-143.

SAPL Contentions are as follows:

SAPL 1: Emergency planning cannot reasonably assure that public health and safety will be protected at the Seabrook site.

As a basis for this contention SAPL noted the unique character of the Seabrook site, located near a barrier beach with a large seasonal population and with limited egress routes.

The Staff noted that the proposed contention was vague, ambiguous, and failed to meet the specificity requirements of 10 CFR Section 2.714(b).

Applicants commented in their filing of April 15 and agreed that emergency planning was an appropriate subject for litigation in this operating license proceeding. Applicants noted deficiencies in the stated contention and recommended it be rejected as written. However, if an emergency planning contention was to be admitted, Applicants urged alternate wording. The contention should be framed to read: "The Applicants have failed to comply with the applicable provisions of 10 CFR §50.47 and 10 CFR 50, Appendix E." Tr. 34. The filing of a more specific contention at this time is not appropriate because the off-site emergency plans have not yet been prepared. ALAB-687, *supra*, 16 NRC 460 (1982).

SAPL-1 is *denied*.

SAPL 2: The operation of the proposed condenser cooling system will have an unreasonable adverse affect on the quality of the aquatic environment.

Petitioner concedes that there have been extensive proceedings on the present design of cooling system at Seabrook. This system uses back-flushing to control bio-fouling. As a basis for this contention, petitioner notes that Applicants are considering the use of chlorine injection, in massive amounts, which may exceed requirements now contained in its permits from the State of New Hampshire and the United States Environmental Protection Agency.

Staff opposes admission of this contention because it is premature. Applicants join Staff in stating that the change to chlorine to clean up the condenser cooling system must first be approved by EPA. The Staff has inquired regarding the status of EPA activities on the application to change the condenser cooling system but it will be many months before a decision is reached.

The Board *denies* admission of Contention SAPL-2 because it is premature.

SAPL 3: The operation of the proposed nuclear plant will have an unreasonable adverse effect upon the economic well being of the seacoast area.

As a basis for this contention, petitioner again notes that the Seabrook power plant is located in the center of one of New Hampshire's most heavily used recreational and tourist areas. Any report of a major accident at Seabrook or any other nuclear plant could have a devastating impact upon the economic well-being of the tourist industry in the area.

Both Applicants and Staff note that, this contention was raised by SAPL at the Seabrook Construction Permit Hearing, was fully litigated, and decided adversely to SAPL. In the Initial Decision for the construction permit the Board found that there was no way to determine the exact impact on tourism in the Hampton-

Seabrook area which would result from the plant. *Public Service Company of New Hampshire, et al.* (Seabrook Station, Units 1 and 2), LBP-76-26, 3 NRC 857, 881-82 (1976).

As this Commission has determined that, "[A]n operating license proceeding should not be utilized to rehash issues already ventilated and resolved at the construction permit stage." *Alabama Power Company* (Joseph M. Farley Nuclear Plant, Units 1 and 2), CLI-74-12, 7 AEC 203 (1974). SAPL alleges no significant intervening change in circumstances which would provide a basis for relitigating this issue. Classic principles of collateral estoppel apply. See *Houston Lighting and Power Company, et al.* (South Texas Project, Units 1 and 2), LBP-79-27, 10 NRC 563 (1979), *affirmed summarily*, ALAB-575, 11 NRC 14 (1980).

The Board concludes that SAPL-3 is *denied*.

SAPL 4: The decommissioning of the Seabrook Plant, should it receive its operating permit and actually operate, will have a major long term negative impact on the health and well-being of the citizens in the area of the facility.

SAPL again cites as a basis for this contention, that the Seabrook plant is within sight of the most heavily used tourist facility in the State of New Hampshire, and on peak summer days, the Hampton Beach State Park. The nature of the plant's impact would be dependent on a selection of the plan for the decommissioning of the plant, which plan would have to provide for complete removal to negate a negative impact on the economic well-being of the area. In its basis, SAPL also raises questions about the financial capability of Applicants to safely decommission and maintain the nuclear facility after its useful life.

Both Applicants and Staff comment that this same issue was fully litigated in the construction permit proceeding to a conclusion adverse to SAPL. They also note that financial qualification of Applicants has been completely eliminated as an issue in operating license proceedings for nuclear power plants. 10 CFR §50.33(f)(1), 50.40(b), as amended by 47 *Fed. Reg.* 13750 (March 31, 1982). The Board agrees.

The Board *denies* SAPL-4.

In its filing of April 5, 1982, SAPL reserved the right to amend its statement of contention by a proper supplement to be filed later. On April 20, 1982, SAPL filed the five supplemental contentions below. In its item 6 of that supplemental filing, it joins in and adopts as its own the contentions 4 through 10, and 12 through 16, and bases therefore set forth by the State of New Hampshire and Attorney General Gregory H. Smith.

SAPL Suppl. 1: The Applicant has not established reasonable assurance that the safety systems of the proposed plant can withstand a worst case accident analysis because of interactions with

components presently classified as non-safety, contrary to the requirements of 10 CFR Part 50.

SAPL cites as the basis the known potential for interaction of safety and non-safety related components as occurred at Three Mile Island. (NUREG-0660, Item 2C3 and NUREG-0737, Item 1C1.)

The Applicants in their response of April 26th note that this contention is vague and without basis. It does not identify what it is the parties are to litigate. It does not identify which safety systems, what worst case accidents, or what non-safety components. Staff finds the contention not a litigable issue and also notes that it is hopelessly vague. Tr. 138.

The Board is unaware of any requirement in the regulations to do a systems interaction study and agrees with the Applicants and the Staff that the Board deny this contention. SAPL Supplement 1 is *denied*.

SAPL Suppl. 2: The Applicant has not provided the assurance that safety related equipment will be able to perform adequately in an accident environment over the projected lifetime of the plant.

SAPL maintains that the contention is based on the need for all safety-related equipment to be able to operate as required by Appendices A, B (Criterion III and XI), G and K of Part 50. (Also 10 CFR 50.55a).

Applicants argue that this contention is vague with respect to environmental qualification of some unstated equipment. It does not identify specifically the matter to be litigated. The Staff expressed similar views. Tr. 141.

The Board *denies* SAPL Supplement 2. This contention is so vague that the Board cannot grasp even a straw of what it is SAPL wants to litigate. In the Board's opinion, it's so imprecise that it flies in the face of the Commission's mandate that a contention must be framed with reasonable specificity. (10 CFR 2.714(b))

SAPL Suppl. 3: The applicable requirements of the Commission's Interim Policy Statement issued June 13, 1980, 45 *Fed. Reg.* 40101 on Nuclear Power Plant Accident Considerations Under the National Environmental Policy Act of 1969 have not been met.

The contention dealing with Class 9 accidents was reframed by Applicants in its response of April 26, 1982, and Counsel for SAPL found the proposed revised language for SAPL Supplement 3, as stated above, to be acceptable. Tr. 136. The Staff concurs that reworded SAPL Contention 3 is acceptable. Tr. 142.

The Board *admits* reframed SAPL Supplement 3.

SAPL Suppl. 4: There is no need for the electricity hoped to be produced by the proposed plant and consequently this Board should find that the costs, including the risk of station operation, outweigh the benefits.

SAPL Suppl. 5: The lead Applicant and certain other Applicants including United Illuminating and Bangor Hydro, cannot demonstrate reasonable assurance that they are financially qualified to meet the cost of operating and decommission the proposed facility.

Staff and Applicants concur that financial qualifications and the need for power have both been prohibited from litigation in operating license proceedings by recent amendments to Commission Regulations. 47 *Fed. Reg.* 12940 (March 26, 1982) and 47 *Fed. Reg.* 13570 (March 31, 1982). On this basis the Board *denies* SAPL Supplements 4 and 5.

SAPL Suppl. 6: SAPL hereby joins in and adopts as its own the contentions and the bases therefore set forth by the State of New Hampshire and Attorney Gregory P. Smith nos. 4 through 10, and 12 through 16.

This contention statement incorporates by reference contentions of another party. The Board will permit this procedure and take action on NH's admitted contentions and will permit SAPL to participate with NH as a Joint Intervenor.

**SOCIETY FOR THE PROTECTION OF THE ENVIRONMENT OF
SOUTHEASTERN NEW HAMPSHIRE (The Society) (Petitioner under
10 CFR §2.714(b)).**

The Society filed its *Supplement to Petition to Intervene Pursuant to 10 CFR 2.714(b), Contentions Which Petitioner Seeks to Have Litigated*, on April 21, 1982. The Applicants filed a response to this Intervenor on April 26, 1982. The NRC Staff filed its response to the proposed contentions of Society on May 10, 1982.

The Society has presented three contentions which it wishes this Board to rule upon.

SOCIETY-A: The Society wishes to litigate the proposed route of transmission lines through the Town of South Hampton, and more particularly, as they relate to the historical sites which are located in said town; the effect that the transmission route

would have on an archaeological site known as “Indian Ground Hill” which archaeologists say represent the wealth of information concerning the Indians who occupied the land prior to its colonization; the effect the proposed transmission line would have as it crossed the Pow Wow River into the neighboring State of Massachusetts and the effect it would have as a recreation site as well as its aesthetic beauty.

SOCIETY-B

(as amended): (Tr. 617-623 and *Society for the Protection of the Environment of Southeastern New Hampshire Supplemental Petition for Leave to Intervene*, July 23, 1982.)

The operation of the transmission lines violates Code of Federal Regulations, Title 10, Energy, Chapter 1 — Nuclear Regulatory Commission, Part 2, App. A, VIII (b)(3)(i) “Whether there is reasonable assurance (i) that the activities to be authorized by the operating license can be conducted without endangering the health and safety of the public” in that the electro-magnetic fields set up by the double and single transmission lines cause radiation which endangers the health and safety of people who inhabit dwellings near the operating transmission lines. Recent articles indicate that electro-magnetic radiation can affect the cardiovascular system, hematology, bio-chemistry, genetics, neuro physiology [sic] and other functions of the human body. The applicant has not demonstrated with reasonable assurance that the operating transmission lines, either single or double, will not affect the health and safety of the public.

SOCIETY-C: The aesthetic affect which the proposed transmission line route would have on the Town.

Both the Applicants and the Staff have objected to the three contentions filed by the Society. Two of the Intervenor’s contentions deal directly with routing of transmission lines in some fashion, and the Applicants argue correctly that the alleged health effects of the third contention are inherently part of routing, not operation. The Applicants note that reconsideration of transmission line routes is barred by the prior litigation of the Seabrook transmission line routes. In Contention B, the Applicants argue, the Society in its proposed contention is simply trying to relitigate the transmission lines issue by stating another reason why the lines should be rerouted.

The Staff has objected to the contentions based upon the fact that none of the proposed contentions has any basis as required under 10 CFR §2.714,¹⁴ and, secondly, the Intervenor is attempting to raise a matter which is not within the scope of issues for an operating license proceeding.

This Board has recognized that the Intervenor herein were not parties to the construction permit proceeding. However, as both Applicants and Staff have noted, the transmission lines were litigated under the construction permit in a prolonged proceeding which at various stages invoked consideration of this issue by a number of appellate courts including a petition for a writ of certiorari to the Supreme Court of the United States. *Public Service Company of New Hampshire, et al.* (Seabrook Station, Units 1 and 2), LBP-76-26, 3 NRC 857, 885, *et seq.*

As the Applicant's Counsel pointed out in the oral arguments to this Board (Tr. 618), whether the Society was a party to the hearing is "legally irrelevant." The notice to parties wishing to intervene in hearings before this Commission are published in the *Federal Register* and as such there is a notice to all the world. A party wishing to intervene at a later time, as the Society does here, cannot complain that it was not in existence at the time of the publication of the notice and be heard to complain about the litigation involved in the notice previously published. In other words, the litigation of the issue of transmission lines either by the Society, or since it did not exist, some other agency or groups of agencies, has exhausted the issue and there is nothing for this Society to litigate in this operating license proceeding.

In Contention B, the Society seeks to litigate the possible health effects resulting from operating of the transmission lines on the basis that the effects represent a safety issue cognizable under 10 CFR Part 2, Appendix A, VIII(b)(3). Tr. 613, 621. Both the Applicants and Staff point out (Tr. 618, 621-2) that the electromagnetic effects asserted in the contention have no specific relationship to radiological effects that are intended in the referenced paragraph (*Ibid.*) of the Commission's rules of practice. The Board agrees. There is nothing unique about electricity generated by nuclear power when it passes through transmission lines that makes it a radiological health or safety issue. The Board does not find that there is any basis upon which to litigate in an operating license proceeding the issue of health and safety of people who inhabit dwellings near operating electrical transmission lines, except under the NEPA authority of the Commission which, as discussed above, was extensively done for the construction permit. The Petitioner made no attempt to base Contention 8 on NEPA requirements.

When in an operating license proceeding an intervenor seeks to halt an already authorized plant construction or some part thereof such as transmission lines, then

¹⁴ *Philadelphia Electric Company* (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-216, 8 AEC 13 (1974) and *Mississippi Power and Light Company* (Grand Gulf Nuclear Station, Units 1 and 2), ALAB-130, 6 AEC 423, 426 (1973).

the intervenor's remedy lies in a petition under 10 CFR 2.206 with officials of this Commission who are empowered with the appropriate remedy at their command.

Both the Applicants and the NRC Staff cited to this Board during oral argument the case of *Consumers Power Company* (Midland Plant, Units 1 & 2), ALAB-674, 15 NRC 1101, 1102-03 (1982). In this case, the Appeal Board noted that:

A licensing board for an operating license proceeding, such as the one involved here, is limited to resolving matters that are raised therein as legitimate contentions by the parties or by the board *sua sponte*. 10 CFR 2.760a; *Consolidated Edison Company of New York* (Indian Point, Units 1, 2 and 3), ALAB-319, 3 NRC 188, 190 (1976). Pursuant to that mandate, a board can authorize or refuse to authorize the issuance of an operating license. *It does not, however, have general jurisdiction over the already authorized on-going construction of the plant for which an operating license application is pending and it cannot suspend such a previously issued permit.* [Emphasis Supplied]

This Board has not attempted in this Intervenor's case to outline fully all arguments presented to the Board either in written pleadings or at the oral hearings. However, all of these have been considered and weighed, and the Board has concluded that these three contentions of the Society should be *denied*. Whether this Board determines that it does not have jurisdiction in the matter or whether or not collateral estoppel applies may be academically interesting but will not contribute to a furtherance of the health and safety issues which this Board must deal with in this proceeding. As the Board noted above, the matters of health and safety which this Board has weighed in regard to the Society's contentions stem from the activity of the Applicants over whose operating license this Board sits as the initial determining body for the Nuclear Regulatory Commission. The Board has determined that a better expenditure of the time of all the parties and this Board would be directed to matters dealing with nuclear power rather than the location and operation of transmission lines over which this Commission has made its determinations during the construction permit stage. This Board has specifically heard the arguments of the Intervenor in regard to the various historical preservation means by which it has solicited this Board's help in ensuring certain remedies to be applied to the immediate vicinity around the Seabrook Station. However, the Board, as was indicated during the oral hearing, has no mandate from this Commission to step outside the scope of its authority and assume authorities from statutes not within the scope of this Commission's concern. The Board, however, wishes to use this Memorandum and Order as the means of advising the Society and its counsel to seek the remedy which it has solicited from the appropriate government agencies involved. With that in mind, this Board requests that the NRC Staff give guidance to the Society and its counsel within the proper scope of its authority and render such assistance as is appropriate to the Society and its

counsel in obtaining a statutorily empowered forum for the determination of its concerns expressed in these contentions before this Board.

Viewing the Society's Contention B as grounded in an environmental basis, the Board finds that the Commission's regulations as implementing the National Environmental Policy Act (42 U.S.C. §4321, *et seq.*) generally limit review of the operating license stage to relevant information arising after a grant of a construction permit. As was determined in *Alabama Power Company* (Farley Nuclear Plant, Units 1 and 2), ALAB-182, 7 AEC 210, 216 (1974), there is a bar against relitigation of issues at the operating license stage, which were considered at the construction permit stage, absent either significant supervening development having a possible bearing upon previously adjudicated issues or the presence of some unusual factor having special public interest implications.

Even the most favorable examination of the Society's Contention B could not endow it with the qualities that Farley, *supra*, spoke of above. Certainly there is no new development regarding these transmission lines. These lines will do in the future what they were meant to do from the moment the CP was awarded to the Applicants, *i.e.*, transmit the electricity from the Seabrook Station. There is nothing new here. Nor is there any unusual factor having special public interest implications that was not exhaustingly litigated in the CP stage. The Society cannot be heard to argue the medical effects of transmission lines on the basis of some effect which was well known at the CP stage.

Although neither the Society nor the Town of South Hampton were parties to the CP proceeding, as the Licensing Board in *Cleveland Electric Illuminating Company, et al.* (Perry Nuclear Power Plant, Units 1 and 2), LBP-81-24, 14 NRC 175, 199-200 (1981) said in describing the licensing process in this Commission, the public is thoroughly caught up in the process by the widespread coverage of every phase of the event by print and electronic press. If there was concern for the health issue, then there was ample notice at the CP stage for the issue to be litigated by one of the parties admitted at that stage. ". . . while intervenors do not have any obligation to represent persons who are not parties, they often attempt to litigate generally any concerns which might also bother other residents in the community." As the Perry Board further noted, the Staff has an obligation to represent the public interest and conduct statutorily required safety and environmental reviews. The Staff opposed these contentions involving transmission lines.

Society Contentions A, B, and C are *denied*.

COASTAL CHAMBER OF COMMERCE OF NEW HAMPSHIRE (CCCNH) (Petitioner under 10 CFR §2.714)

The CCCNH had withdrawn its earlier filed contentions and has submitted on June 8, 1982 in *Coastal Chamber of Commerce of New Hampshire's Response to Applicant's Response to Supplement to Petition to Intervene and Contentions of*

Coastal Chamber of Commerce of New Hampshire its revised contentions which will be set forth in full as follows:

- CCCNH 1 and 2: The Applicant has failed to comply with the Commission requirements that an emergency plan must be adequate and capable of being implemented and therefore has failed to provide reasonable assurance that adequate protective measures can and will be taken in the event of an emergency. 10 CFR 50.54(a)(1), (2); 10 CFR 50.34(b)(6)(v).
- CCCNH 3: The Applicant has failed to comply with state and local government off-site emergency plans. 10 CFR 50.33(g), Appendix E III. There is no indication that the emergency plan will coordinate with state and local off-site plans. The Applicant has failed to submit state and local emergency plan agreements as required by NUREG-0654, Appendix III. The Coastal Chamber of Commerce reserves the right to amend its contentions to challenge the sufficiency of the Applicant's plan to coordinate with state and local authorities.
- CCCNH 4: The Applicant has not adequately demonstrated that it has developed and will be able to implement procedures necessary to assess the impact of an accident, classify it properly, and notify adequately its own personnel, the affected governmental bodies, and the public, all of which is required by 10 CFR 50.47 and Appendix E, and NUREG-0654.
- CCCNH 5: The Applicant has failed to demonstrate adequate on-site and off-site protective measures in the event of an emergency in accordance with 10 CFR 50.47(a)(6), 10 CFR 50, App. E, and NUREG-0654.
- CCCNH 6: *Emergency Planning Zones*
Applicant's acceptance without formal analysis or evaluation of Circular 10- and 50-mile radius for the emergency planning zones does not discharge the Applicant's responsibilities to ensure that adequate emergency response plans exist to protect the health and safety in the event of an emergency at Seabrook. *See*, §4.3 of the emergency plan. Designation of Circular 10- and 50-mile emergency planning zones is unjustified because such emergency planning zones do not consider local emergency response needs

as they are affected by such factors as demography, topography, land characteristics, access routes and jurisdictional boundaries.

CCCNH 7: *Radioactivity Monitoring*

The Seabrook design does not provide an adequate program for monitoring the release of radioactivity to the plant and its environs either under normal operating conditions or in pre- and post-accident circumstances. Thus, the application is not in compliance with general design criteria 63, 64 of Appendix A 10 CFR Part 50, and requirements of NUREG-0737 and NUREG-0800.

CCCNH 8: *Control Room Design*

The control room design for the Seabrook plant does not provide adequate controls and instrumentation to monitor variables as appropriate to comply with general design criteria 13. All operator actions necessary to take the plant from normal operation to cold shutdown should be capable of being performed from the control room. The control room panel must be adequate to provide the appropriate and necessary information to operators in the event of an accident. Instrumentation must be provided for an adequate amount of parameters and, additionally, that such instrumentation be environmentally qualified. And further an adequate system must be provided to inform the operator regarding the status of safety systems, *i.e.*, whether a safety system has been deliberately disabled.

A detailed control room design review (DCRDR) should be carried out in conformance with the guidelines of NUREG-0700 and NUREG-0737 (Item 1.D.1 and 2).

Finally, the Seabrook facility must be designed to provide adequate equipment outside the control room to promptly put the reactor in hot shutdown and maintain it until cold shutdown from outside the control room as required by general design criteria 19, 20, 21 and 22 of Appendix A, to Part 50.

CCCNH has in support of these Contentions 1 through 6 argued (1) that the evacuation plan cannot reasonably assure that adequate measures can or will be taken in the event of an emergency; or (2) that the Applicants have failed to comply with State and local government off-site emergency plans; (3) that the emergency classifications and actions scheme required under 10 CFR 50.47(b)(4) and NUREG-0654, Appendix 1 as outlined in §9 of the Applicants' emergency plan is inadequate; (4) that the emergency plan does not contain any off-site preparedness plans of the State or local emergency response organizations; or (5) that the emergency plan demonstrates that adequate arrangements have been or will be

made for medical services for contaminated injured individuals; and (6) that the Applicants have not demonstrated in their emergency plan whether in case of an accident it will be possible to protect or evacuate the large number of people who may be within the zone of danger at any given moment. In CCCNH-6 the Intervenor seeks to support this contention by arguing that the Applicants have not considered adequately the effect of such things as the proposed circular 10-mile emergency planning zone nor taken into account unique factors within the region such as the rural-urban mix, automobile ownership, ownership of campers, vans, and second homes, available public transportation, proportion of the population confined to institutions, location of friends and relatives, etc. CCCNH contends that such factors as those enumerated above must be investigated and considered in deciding how large and what shape the plume exposure emergency planning zone should be.

In support of CCCNH-7 dealing with radioactivity monitoring, this Intervenor seeks to establish that the Applicants must provide sufficient radiation monitoring capability in containment spaces which could contain LOCA fluids, effluent discharge paths, and plant environs as required by General Design Criterion 64. CCCNH also contends that the Applicants must assure that the health physics division at the plant is qualified and properly staffed to perform this service.

In support of Contention 8 on control room design, CCCNH wishes to litigate the control room design so as to ensure that the displays and controls in the control room do not increase the potential for operator error such as was involved in the Three Mile Island accident. CCCNH wishes to establish that at Seabrook the accident monitoring and control room design be the optimum because of the difficulties inherent in carrying out protective actions for the population in the immediate vicinity of the plant.

The Applicants in contesting Contentions 1 through 6 note that they all deal with emergency planning.

In Contention 7 CCCNH seeks to raise the off-site radiation monitoring which in Applicants' view was litigated in the construction permit proceeding. In Contention 8 the Intervenor, Applicants state, lacks any basis for saying that the Seabrook's control room design is not in compliance with the various regulations cited. In the case of Contentions 7 and 8 the Applicants urge the Board to reject the contentions.

The NRC Staff has replied to the contentions of CCCNH and points out that Contentions CCCNH-1 and 2 are lacking in any basis since they are conclusionary statements. In CCCNH-3, the Staff maintains that the off-site emergency plans for Seabrook have not been developed and considers the filing of a contention based upon those plans as being speculative and premature. In CCCNH-4 and 5, the Staff objects only to that portion dealing with the inadequacy of State and local plans because the contentions are speculative and premature. In regard to CCCNH-6, the Staff finds that the contention lacks specificity and adequate basis in that the

Intervenor does not state an example of how the 10-mile EPZ fails to account adequately for jurisdictional boundaries. Although this Intervenor was given an opportunity to amend CCCNH-6 to perhaps remedy this objection of the Staff, the Board has been advised by telegraph of July 23, 1982 that the Intervenor does not wish to change the wording of its contention to meet the objection of the Staff and provide specific examples of how the plans fail to account adequately for the jurisdictional boundaries. The Staff has found these unclear and that they fail to demonstrate how the designation of the 10-mile EPZ relates to the second basis of CCCNH-6 concerning such unique factors as the rural-urban mix. In regard to CCCNH-7, the Staff does not oppose the contention. In CCCNH-8, on control room design, the Staff maintains that Intervenor has not specified what in the control is not in compliance with the provisions of the various documents and design criteria noted and therefore objects to receipt of this contention.

As this Board has noted elsewhere in this Order, matters dealing with off-site emergency planning will be deferred until plans have been prepared and filed. CCCNH-1, 2, 3 and 6 are *denied*.

The Board has determined that Contention 4 will be *admitted*. Contention 5 will be *admitted* except for that portion of CCCNH-5 which seeks to litigate at this time "off-site" protective measures. CCCNH-7 will be *admitted*.

CCCNH-8 is *denied* because it does not state the basis upon which CCCNH finds the Seabrook control room design not in compliance with the various regulations cited. In denying CCCNH-8 the Board notes the interest this Intervenor has expressed and finds that similar interest has been set forth in NH-10 already admitted. Accordingly, CCCNH is instructed by this Board to join NH in pursuing its interest as a Joint Intervenor.

The Board notes that Contention 4 is similar to the State of New Hampshire's Contention NH-20 and directs that these parties coordinate efforts in litigating this matter in order to eliminate any duplicative effort.

TOWN OF SOUTH HAMPTON (The Town) (Petitioner under 10 CFR §2.714)

The Town filed its *Amendment to Petition for Leave to Intervene of the Town of South Hampton* on April 13, 1982. In this petition the Town set out five contentions.

The Applicants responded to this petition on April 16, 1982 and the NRC Staff filed *Response of the NRC Staff to the Proposed Contentions of . . . the Town of South Hampton of New Hampshire*, on May 10, 1982. At the PHC-II on July 16, oral arguments were made to this Board by the Town, Applicants, and the NRC Staff. Tr. 563-607.

The contentions of the Town of South Hampton are stated as follows:

- TOWN-1: The transmission lines emanating from the Seabrook Nuclear Power Plant would, and as presently routed, have a most severe and adverse impact upon Indian Ground Hill, a ridge of high ground, which is historically significant as an Indian camp ground and possible burial ground.
- TOWN-2: The transmission lines emanating from the Seabrook Nuclear Power Plant would, as presently routed, have a most severe and adverse impact upon the historical district at the center of the Town of South Hampton.
- TOWN-3: The transmission lines emanating from the Seabrook Nuclear Power Plant would, as presently routed, have a most severe and adverse impact upon the historical areas known as Jewell Town and Highland.
- TOWN-4: The transmission lines emanating from the Seabrook Nuclear Power Plant would, as presently routed, have a most severe and adverse impact upon the property values within the Town of South Hampton commercial and residential districts.
- TOWN-5: Reasonable alternatives to the present transmission line routes including, but not limited to, underground placement of lines must be formulated prior to any grant of operating authority.

This Board has clearly indicated in the discussion concerning the contentions of the Society for the Protection of the Environment its position that the matter of the routing of the transmission lines emanating from the Seabrook plant has been completely and exhaustively litigated at the CP stage. This Board will not entertain any further contention(s) at this operating license stage based upon the placement of the transmission lines since this is not a matter which this Board may consider at this stage. Indeed, this Board takes the position that the Town of South Hampton should be admitted as an interested municipality herein under the provisions of §2.715(c)¹⁵ which permits the presiding officer to “afford representatives of an interested State, county, municipality and/or agencies thereof, a reasonable opportunity to participate and to introduce evidence, interrogate witnesses, and advise the Commission without requiring the representative to take a position with respect

¹⁵ See discussion under section on contentions of the Commonwealth of Massachusetts of §2.715.

to the issue.” This Board does require the Town to meet the requirement of §2.715(c) that the municipality indicate with reasonable specificity in advance of the hearing the subject matter, other than the routing of the transmission lines, on which it may desire to participate. In view of the provisions of that section, the Board finds that the vital interests of the Town of South Hampton and its concerns with the Seabrook plant will be protected with its participation on those health, safety and environmental issues which will come before this Board during the future proceedings. Accordingly, this Board admits the Town of South Hampton as a party under the provisions of §2.715 and *denies* as being previously litigated *the five contentions* set forth above.

SUN VALLEY ASSOCIATION (SVA) (Petitioner under 10 CFR §2.714(b))

SVA has revised its originally filed contentions by striking each of them and has submitted two new contentions in lieu thereof. These were filed by SVA on June 15, 1982. The contentions are as follows:

SVA-1: The Seabrook Station off-site emergency planning does not comply with applicable provisions of 10 CFR §50.47, 10 CFR §50, Appendix E, and NUREG-0654.

SVA-2: Off-site emergency planning based upon existing egress routes cannot reasonably ensure the safe removal of the local populace in the event of a nuclear accident. The cornerstone of an evacuation plan which might be deemed adequate under applicable regulations would be the construction of a new highway linking the Hampton-Seabrook area with the interstate highway system.

The Applicants oppose the first of these contentions only in that it includes a reference to NUREG-0654. Because NUREG-0654 is not a regulation, compliance with it is unnecessary. The second of the contentions the Applicants object to is Contention SVA-2 because it lacks a basis and tells the parties nothing about what accident is involved. The Applicants maintain that the second contention is so vague and nonspecific as to fail to put the Applicants on notice as to what they must prove. The off-site plan has not been filed and SVA does not specify the inadequacies in the off-site plan which it seeks to litigate. The Staff objects to SVA-2 in that SVA does not identify the evacuation routes planned to be used by the emergency planners or give reasons why the routes are inadequate or explain why, if egress routes are inadequate, that the resolution of the problem lies in the construction of a new highway to the already existing interstate highway system.

The Sun Valley Association here argued orally during the PHC-II that it has no objection to withholding these two contentions until such time as the off-site planning had been completed and filed. Tr. 627-631.

The Board *denies* Contentions SVA-1 and 2. The off-site emergency plan has not been filed and these contentions are premature. ALAB-687, *supra*, 16 NRC 460 (1982).

ORDER

For all the foregoing reasons and based upon a consideration of the entire record in this matter, it is,

ORDERED,

That those Intervenors and their contentions as set forth in this Memorandum are admitted as parties with their contentions to this proceeding and that all other Intervenors' petitions and their contentions are denied.

FOR THE ATOMIC SAFETY
AND LICENSING BOARD

Helen F. Hoyt
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,
this 13th day of September, 1982.

APPENDIX A

Schedule for Proceeding

September 15, 1982	Opening of Discovery on Contentions Admitted by Order of 9/13/82.
November 8, 1982	Staff SER filed.
December 15, 1982	Last Discovery Request on the Contentions Admitted by Order of 9/13/82.
January 11, 1983	Prehearing Conference for Schedule Adjustments and Resolution of Identified Discovery Disputes for Contentions Admitted by Order of 9/13/82.
February 12, 1983	Motion(s) for Summary Disposition of Contentions Admitted by Order of 9/13/82 to Be Filed by This Date.
March 9, 1983	Answers to Motion(s) for Summary Disposition Filed on 2/12/83.
April 5, 1983	Ruling(s) of Presiding Officer on Summary Disposition (10 CFR §2.749(d)).
May 5, 1983	Direct Testimony Filed. FEMA Testimony Filed.
May 28, 1983	Rebuttal Testimony Filed.
June 14, 1983	Hearing Begins.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Dr. Oscar H. Paris
Mr. Frederick J. Shon

In the Matter of

Docket No. 50-155
(Spent Fuel Pool Amendment)

CONSUMERS POWER COMPANY
(Big Rock Point Plant)

September 14, 1982

In this Initial Decision, the Licensing Board holds that the applicant must carry the burden of proof in demonstrating that the off-site emergency plan has complied with the Commission's emergency planning rules and guidance. It must carry that burden whether or not it is primarily responsible for performing the functions involved in the plan. Because applicant did not carry that burden, it must demonstrate to the Board that the deficiencies in its plan have been remedied, are not serious, or are being remedied through adequate interim compensating actions. The deficiencies include failures of proof related to the training of local officials or school officials, the need for transportation of persons who lack personal vehicles, the availability of a satisfactory method of alerting school bus drivers who are not on duty, that there is adequate transportation for schoolchildren, that there is an adequate list of invalids being maintained and that there is an adequate method of establishing emergency bus routes.

Intervenor's contention that applicant had not implemented adequate administrative controls to prevent cask drops over the spent fuel pool was dismissed for lack of merit.

RULES OF PRACTICE: EMERGENCY PLANNING; BURDEN OF PROOF

Applicant has the burden of proof to demonstrate that the off-site emergency plan complies with Commission rules and guidance. The burden must be carried whether or not applicant is primarily responsible for carrying out a particular aspect of the plan.

RULES OF PRACTICE: EMERGENCY PLANNING; CORRECTING DEFICIENCIES

A Licensing Board prescribes procedures by which applicant may remedy deficiencies in its case concerning the adequacy of emergency planning.

TECHNICAL ISSUES DISCUSSED

Emergency Planning (Estimating Training Needs)
Emergency Planning
Administrative Controls (Cask Drops)

INITIAL DECISION

**(Covering Administrative Controls on Handling Fuel Casks and the Following Emergency Planning Issues:
Education of Public Officials,
Evacuation Assistance for People Without Vehicles, and
Keeping Current a List of Invalids)**

This is the second of a series of decisions. The first decision, which introduced the series, was LBP-82-60, 16 NRC 540 (1982). In this decision we address three of the emergency planning subissues and an issue concerning the adequacy of administrative controls on handling fuel casks.

We find that applicant has failed to carry the burden of proof on several aspects of the emergency plan, and we have therefore retained jurisdiction to permit applicant to show that these deficiencies will be satisfactorily resolved. A reason that the burden of proof was not carried is that applicant appears to have believed, erroneously, that it need not demonstrate the adequacy of portions of the emergency plan for which State and local governments have the primary responsibility. *See, e.g., Applicant's Reply (August 19, 1982) at 7-9.*

Applicant has persuaded us that its administrative controls on handling fuel casks are adequate. Consequently, Christa-Maria's contention on this issue is found to be without merit.

I. EDUCATION OF PUBLIC OFFICIALS

The relevant portion of Christa-Maria Contention 9(2) states:

[T]he public, local officials, and school officials should be more completely educated in problems of radiation exposure.

This contention must, of course, be interpreted in light of the applicable regulatory materials, particularly 10 CFR §50.47(b)(15), which adopted guidance previously found only in NUREG-0654 at 75:

Radiological emergency response training is provided to those who may be called on to assist in an emergency.

See 45 Fed. Reg. 55402 (August 19, 1980) (statement of consideration for the emergency planning rule, stating that the standards in the rule are a restatement of NUREG-0654). This text is amplified by a set of "evaluation criteria" that require the licensee and state and local governments to fulfill the following requirements (among others):

Each offsite response organization shall participate in and receive training. Where mutual aid agreements exist between local agencies such as fire, police and ambulance/rescue, the training shall also be offered to the other departments who are members of the mutual aid district.

Each organization shall establish a training program for instructing and qualifying personnel who will implement radiological emergency response plans.* The specialized initial training and periodic retraining programs (including the scope, nature and frequency) shall be provided in the following categories: a. Directors or coordinators of the response organizations; b. Personnel responsible for accident assessment; c. Radiological monitoring teams and radiological analysis personnel; d. Police, security and fire fighting personnel; e. Repair and damage control/correctional action teams (onsite); f. First aid and rescue personnel; g. Local support services personnel including Civil Defense/Emergency Service personnel; h. Medical support personnel; i. Licensee's headquarters support personnel; and j. Personnel responsible for transmission of

*If State and local governments lack the capability and resources to accomplish this training, they may look to the licensee and the Federal government (FEMA) for assistance in this training.

emergency information and instructions. [Furthermore,] Each organization shall provide for the initial and annual retraining of personnel with emergency response responsibilities.

NUREG-0654 at 75-77; *see also* 10 CFR Part 50, App. E, §IV.F.

To be sure, the requirements of NUREG-0654 are extensive and demanding. However, no party has given us any reason to deviate from its requirements, which we must therefore apply. Although the regulations permit a division of responsibility among applicant and State and local governmental units, they also require that the NRC determine that the state of emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken. 10 CFR §50.47 and 50.54(s)(2)(ii). In this proceeding, applicant must carry the burden of proof on this issue, without regard to which entity has the principal responsibility. 10 CFR §2.732. *See* letters to Consolidated Edison Company of New York, Inc. and Power Authority of the State of New York from Ronald C. Haynes, Regional Administrator, NRC Region I, dated August 3, 1982, invoking provisions of 10 CFR §50.54(s)(2)(ii) with respect to Indian Point Nuclear Power Station, Units 2 and 3.

Applicant contends that the State of Michigan Emergency Plan provides a "comprehensive framework" for training local officials in emergency duties. Consumers Power Company's Proposed Opinion, etc., July 30, 1982 at 2 (Applicant's Proposed Opinion). However, the testimony of Mr. Charles Axtell, to which applicant directs us, never claims that the framework is comprehensive. Axtell at 4, after Tr. 1047. What Mr. Axtell has done is to cite portions of the State plan assigning *responsibilities* to various government agencies for nuclear emergency training programs. What he has not done is to provide any evidence that these responsibilities have been fulfilled by devising a training program that systematically considers who must be trained, what they must learn and how they will be trained. He is persuasive in informing us that a variety of groups have been trained, with substantial effort and care, by applicant, but he provides us with no basis for determining which personnel require training or what percentage of the requirement has been met. Tr. 1079-1094. Nor does he address the frequency with which retraining must be provided, as required by evaluation criteria 0.4 and 0.5 of NUREG-0654. *See, e.g.*, Tr. 1082.

The testimony of Mr. Danny B. Bement of the Federal Emergency Management Agency fails to fill this gap in our evidentiary record. Although Mr. Bement testifies that "local officials and school officials are trained," he does not specify how many require training and what percentage have been trained. Bement at 4, after Tr. 833. Hence, we have no testimony about who must be trained, and applicant has not shown that the emergency plan, by whomever implemented, meets the evaluation criteria of NUREG-0654.

We conclude that applicant has failed to meet the burden of proof concerning the adequacy of the radiological training program for local officials and school officials. (Although we have attempted to read the emergency plan and to ascertain

this information, nothing in that plan has been brought to our attention by applicant's or Staff's findings and we have not found anything that fills the gaps we have identified. We note that Mr. Axtell testified that applicant knows the number of school officials in the Emmett and Charlevoix County School Districts that it has trained, but the information does not appear to be in our record. Tr. 1079.)

(Christa-Maria has not demonstrated the need for us to require that the emergency operations center acquire and publicize a single emergency telephone number.)

II. ASSISTING PERSONS WITHOUT VEHICLES

This subcontention states:

Applicant should be required to assist persons without vehicles to leave the area during an emergency evacuation.

Although applicant and Staff have cited general regulatory principles, the parties have provided us with little guidance on how to apply the applicable regulatory materials to the facts before us. Consequently, we shall forge our own path through the wilderness of the applicable regulations.

The following text from 10 CFR §50.47 is controlling:

The . . . offsite emergency response plans for nuclear power reactors must meet the following standards:

* * *

(8) Adequate emergency facilities and equipment to support the emergency response are provided and maintained.

This sparse text derives amplification from the following guideline contained in NUREG-0654, at 61-62:

[Each State and local] . . . organization's plans to implement protective measures for the plume exposure pathway shall include:

* * *

g. Means of relocation.

These passages do not deal explicitly with the question of whether local organizations or applicant must provide transportation to those who lack their own. However, Appendix 4 to NUREG-0654 requires that special attention be paid to households that lack an automobile and are therefore dependent on public transportation. *Id.* at 4-3. NUREG-0654 also requires that "The initial notification system will assure direct coverage of essentially 100% of the population within 5 miles of the site." NUREG-0654 at 3-3. We construe the "means of relocation" requirement in relation to the 100% notification requirement. There is no point in requiring notification of people who lack vehicles unless the regulations contemplate that, after notifying them, there will be some way for them to be relocated, if that is appropriate. Consequently, the evacuation plan should be interpreted to require both notification and relocation of individuals.

This does not, of course, make applicant responsible for the means of relocation. However, applicant must show that the plan meets this criterion. If the

responsibility is not met, then the Commission has recognized the possibility that applicant might need to make up the deficiency, out of its own pocket if no other way can be found. 45 *Fed. Reg.* 55402 at §IX. Funding (August 19, 1980). Of course, it is expected that in most instances local resources will be sufficient for the implementation of the evacuation plan.

It is our conclusion that applicant has demonstrated that means are available for informing persons who lack vehicles how they may obtain transportation. The information pamphlet and the included "special needs" form will help to inform people lacking personal vehicles to obtain a ride with others or to listen to radio and television. It also will help to register residents (but not transient tour groups arriving by bus and lacking transportation while they are in the area). *See Consumers Power Exhibit 5* at 8.

An important gap in our record is that there is no indication that anyone has estimated the need for emergency transportation. Although Mr. Bement asserted that "adequate planning has taken place to assist persons without vehicles" (Bement at 5, after Tr. 833), we disagree with his characterization of the planning as adequate. While we accept Mr. Bement as an honest and truthful witness, we are not persuaded when Mr. Bement offers overall assessments not accompanied by an explanation of his reasons. *See, e.g.,* Mr. Bement's judgment concerning notices that are "conspicuously displayed" because they are in the inside back cover of a telephone directory, Tr. 1011-1020, especially Tr. 1020; *see also* Tr. 951-955, 977 concerning Mr. Bement's knowledge of the availability of equipment for transporting people, and Tr. 925-27 concerning Mr. Bement's lack of knowledge of the total population of the Emergency Planning Zone. In reaching this conclusion, we note that FEMA has not yet made a formal finding concerning the adequacy of the Big Rock evacuation plan. Tr. 993-994. All we have is testimony of one FEMA witness, which we do not believe is entitled to a presumption of correctness. However, even were it entitled to such a presumption, we would reject it for the reasons we have discussed.

We have some information about available transportation, developed with respect to the subcontention about invalids. There appear to be 24 buses, 2 vans and 3 small buses available but only five drivers trained in emergency procedures. Tr. 1481. It is not clear whether any are trained or able to handle invalids lacking personal vehicles. Tr. 1501.

According to hearsay evidence, the business manager of the Charlevoix School District believes it would take no longer than three hours for the buses to fulfill their primary obligation, to move schoolchildren, if school were in session. Tr. 949, 960. However, we are unable to accept this opinion as correct, both because we have not been provided with the analytical and empirical basis for the conclusion and because the testimony is not that of an expert on emergency planning or of an engineer qualified to analyze traffic congestion problems.

There is no indication that there are enough buses to transport ambulatory hospital patients. *See* Tr. 965, which establishes that buses could accomplish the task but does not establish that enough buses would be available. There are no prearranged bus routes; thus each bus driver who arrives at the emergency operations center must be given an individual route that has never been driven before. Tr. 1489, 1491-93. The record does not show how these routes will be devised or communicated. There has not been any analysis of the amount of congestion that would occur near the emergency operations center during an evacuation. Furthermore, the record does not contain any information on whether it will be feasible to alert bus drivers who are not on duty and therefore cannot be reached via the citizens band radios they have in their buses. We are not assured by Mr. Bement's rejoinder that anyone can drive a bus in an emergency. Tr. 954.

An appropriate expert should analyze: traffic congestion in emergencies, the capacity of the school buses, the number of children requiring transportation (including children not ordinarily requiring school bus transportation), the number of trips required, the willingness of bus drivers to make multiple trips into areas that may be radioactive (and the availability of back-up drivers) and the time the buses will need to do the job properly. Parents must then be fully informed about the plans for evacuating their children. If necessary, alternate means of transportation may need to be arranged for schoolchildren and for others whom the plan requires to wait for the conclusion of the school evacuation. Adequate provision must be made for schoolchildren, both because of the importance that the community places on them and because dissatisfied parents may make multiple trips to schools, impeding an evacuation.

In light of our findings concerning transportation for individuals without vehicles, including transportation of invalids and schoolchildren, we retain jurisdiction over this issue. Applicant has one month from the date of issuance of this decision to file evidence demonstrating that effective steps have been or are being taken to estimate the need for transportation of residents and transients who lack personal transportation and to provide reasonable means for emergency relocation of those individuals. In the alternative, applicant may demonstrate that the deficiencies are not serious or that adequate interim compensating actions will be taken. 10 CFR §50.54(s)(2)(ii).

III. LIST OF INVALIDS

Christa-Maria contends that:

A current list of invalids should be kept so that they can be assisted in time of emergency.

Applicant concedes that "Obviously, the whereabouts of such persons should be known so that they can be assisted and provided transportation should evacuation

be necessary." Applicant's Proposed Opinion at 7; NUREG-0654, Evaluation Criterion 10.d and g at 61, 63.

A list of invalids is being kept by the Charlevoix County Sheriff. Bement at 6-7, after Tr. 833; Tr. 962-64 and 1478-79. Currently, the list of invalids consists of 40 residents of Charlevoix County who responded to two newspaper articles, a year apart, and to the original emergency planning pamphlet. *Id.* The new emergency planning pamphlet, to be distributed soon, will contain a renewed appeal for the names of invalids. Consumers Power Exhibit 5 at 10, 23 (special needs form).

However, there was no testimony from which we can evaluate the success of these methods of enrolling invalids. One obvious difficulty, not adequately addressed in our record, is that invalids with short-term problems are unlikely to enroll. It may be that analysis will demonstrate that a continuous program of enrolling them is not justifiable from a cost/benefit standpoint. However, it may be feasible either to alert them to their potential problem or to enroll a substantial portion of them by posting notices or distributing literature in selected locations, such as hospital discharge desks and emergency wards. Some telephoning of social service and religious organizations also might quickly determine how comprehensive the list of long-term invalids may be and may succeed in adding some names to the list. It is not appropriate to rely on vague feelings about the likely success of the means of distribution of information when it is feasible to obtain direct information about the adequacy of the list of invalids through a few telephone calls to knowledgeable individuals. It is not appropriate to rely on hunches or for this Board to accept hearsay testimony that a single individual, the extent of whose knowledge has not been explored, believes in the adequacy of the list of invalids within Emmet County. Tr. 964.

We conclude that applicant must cure the deficiency in our record by demonstrating that there is a satisfactory list of invalids being maintained or that appropriate interim measures are being taken.

IV. COORDINATION AND RELIANCE ON PEOPLE WHO EXIST

Intervenors contend that:

Applicant's emergency plan should be revised so that it relies only on people who exist and have been properly identified and so that there will be adequate coordination among responsible personnel.

However, intervenors have not found any findings of fact on this issue and we do not know of any reliance on nonexistent individuals. We accept the testimony of Mr. Charles Axtell that applicant's site emergency plan and its implementing procedures, which together are the subject of this contention, rely only on individuals who exist and provide for adequate coordination, now that a direct telephone link has been established between the plant and the Emergency Operations Center. Axtell at 11-14, following Tr. 1047. We do not interpret the

contention to raise an issue about the adequacy of plans for back-up personnel, and this question is not sufficiently important to merit *sua sponte* treatment as the responsible officials already know of the problem. *See* Bement at 8, after Tr. 833. Consequently, we find that this contention lacks merit.

V. ADMINISTRATIVE CONTROLS TO PREVENT A CASK DROP

John O'Neill contends that:

Administrative controls proposed to prevent a cask drop over the pool are inadequate. These are mentioned on pages 4-9 of the application. Administrative controls have proved inadequate in the past in preventing incidents and are frequently violated at the plant.

The portion of the application to which Mr. O'Neill apparently refers in his contention is found on p. 2-18 (previously numbered p. 4-9) and states:

Administrative controls will be established for casks other than the fuel transfer cask to ensure that: (1) no cask is moved over stored spent fuel, (2) all cask handling operations are limited to the southwest corner of the spent fuel pool, and (3) no spent fuel is stored in the two existing "A" racks adjacent to the cask handling area during cask handling operations. These controls will preclude the dropping or tipping of a cask into a fuel rack with stored fuel.

As Staff points out, 10 CFR §50.57(a)(3)(i) requires reasonable assurance that all licensed activities can be conducted without endangering the public health and safety. Thus, adequate administrative controls that are not violated frequently are required.

Applicant's witness, Mr. Edmund W. Raciborski, testified that there has been a total of 23 administrative control violations in 19 years of plant operation. Raciborski at 10, after Tr. 2579. All but one have been satisfactorily resolved and the other is also about to be resolved. *Id.* at 10-11; Donnelly at 8-12, after Tr. 2579 (updated at Tr. 2577).

In evaluating the adequacy of the administrative controls, we were influenced by testimony of Mr. David Blanchard, a Technical Engineer at the Big Rock Point Plant. Mr. Blanchard testified extensively before us on several issues and persuaded the Board that he is intelligent, extremely well informed about technical issues concerning his plant, and complete and thoughtful in his testimony. We accept Mr. Blanchard's testimony that he personally participated in developing the administrative controls, which are adequate for the existing spent fuel pool. We also are convinced that the controls, as modified to prevent casks from being placed in the pool unless the two racks in the vicinity of the cask handling area are verified to be empty, are adequate for the protection of the fuel-pool configuration anticipated by the application for a license amendment. (We note that intervenors

have not filed findings of fact on this issue, possibly because of the time demands placed on Mr. O'Neill by the influx of customers to his restaurant during the summer season.)

Consequently, we find that this contention is without merit.

ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 14th day of September, 1982,

ORDERED:

(1) Consumers Power Company (applicant) may demonstrate, within one month of the issuance of this order, that the deficiencies discussed in the accompanying memorandum have been remedied, are not serious, or are being remedied through adequate interim compensating actions.

(2) The deficiencies referenced in paragraph (1) of this order include:

- (a) failure to show the extent of the need for radiological training of local officials or school officials or to show that the need is being met in a satisfactory fashion by the combined efforts of applicant and State and local governments;
- (b) failure to show the extent of the need for transportation of persons who lack personal vehicles or to demonstrate that the need is being met in a satisfactory fashion by the combined efforts of applicant and State and local governments;
- (c) failure to show that there is a satisfactory method of alerting school bus drivers who are not on duty or that such bus drivers have agreed to perform emergency transportation duties at a time when they are not on duty;
- (d) failure to show that if an emergency is declared while school is in session that there will be adequate transportation available for school-children, including school children who do not ordinarily rely on school buses for transportation;
- (e) failure to show that an adequate list of invalids is being kept in order to facilitate their evacuation during an emergency; and
- (f) failure to show the method by which emergency bus routes will be established or that it will be feasible for bus drivers who have never before seen the routes to drive them in an acceptable manner.

(3) Within 20 days of the filing of applicant's response to paragraph (1) of this Order, other parties may comment on the adequacy of applicant's response and may suggest the need for further hearings on these matters or appropriate remedies to cure the deficiencies.

(4) John O'Neill's contention concerning administrative controls to prevent a cask drop over the spent fuel pool is dismissed for lack of merit.

(5) Christa-Maria, *et al.*'s contention concerning the reliance of the emergency plan on people who do not exist is dismissed for lack of merit.

(6) Within ten (10) days after service of this decision, a party may appeal by the filing of exceptions to the decision or any part thereof, pursuant to the provisions of 10 CFR §2.762, which imposes requirements of conciseness and particularity and provides for the subsequent filing of appeal briefs.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE**

**Dr. Oscar H. Paris
ADMINISTRATIVE JUDGE**

**Mr. Frederick J. Shon
ADMINISTRATIVE JUDGE**

Bethesda, Maryland

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Peter B. Bloch, Chairman
Dr. Oscar H. Paris
Mr. Frederick J. Shon**

In the Matter of

**Docket No. 50-155
(Spent Fuel Pool Amendment)**

**CONSUMERS POWER COMPANY
(Blg Rock Point Plant)**

September 15, 1982

In this Initial Decision, the Licensing Board finds that an environmental impact assessment, prepared with respect to an amendment to expand the capacity of a spent fuel storage pool, was adequate. Intervenors did not successfully challenge its negative findings concerning the lack of any significant environmental impacts.

Additionally, the Board finds that the environmental impact assessment adequately treated alternatives to the spent fuel when it found that the pool modification "will not result in any significant change in the commitment of water, land and air resources" and when it also found that the use of stainless steel to fabricate new fuel racks is an "insignificant" use of that resource. Intervenor also failed to make an effective challenge to this Staff's basis for this finding.

RULES OF PRACTICE: STUDY OF ALTERNATIVES

An environmental impact appraisal prepared with respect to the expansion of the capacity of a spent fuel pool need not discuss further the alternatives to an expansion of the pool if the appraisal has an adequate basis for finding that the expansion would not cause any unresolved conflicts about alternative uses of resources.

RULES OF PRACTICE: ENVIRONMENTAL IMPACT STATEMENT

An environmental impact statement need not be prepared with respect to the expansion of the capacity of a spent fuel pool if the environmental impact appraisal prepared for the project had an adequate basis for concluding that the expansion of a spent fuel pool would not cause any significant environmental impact.

INITIAL DECISION (Concerning Environmental Issues)

This decision, the third in a series of initial decisions, addresses Christa-Maria *et al.*'s (Christa-Maria or Intervenors) environmental contentions: (1) that the environmental impact appraisal (EIA) issued by the Staff of the Nuclear Regulatory Commission (Staff) does not comply with section 102(2)(E) of the National Environmental Protection Act (NEPA), 42 U.S.C. §4332(2)(E), and (2) that Staff must "study, develop and describe" alternatives to the expansion of the Big Rock Point Spent Fuel Pool.

We find these contentions to be without merit. Christa-Maria's principal argument is that NEPA §102(2)(E) requires attention to alternatives to the proposed pool expansion. However, we interpret that section to require studies of alternatives only if there are "unresolved conflicts concerning alternative uses of available resources." Furthermore, we find that none of the cases relied on by Christa-Maria, including *Dairyland Power Cooperative* (La Crosse Boiling Water Reactor), LBP-80-2, 11 NRC 44 (1980), is inconsistent with our interpretation of §102(2)(E).

Christa-Maria has asked us to find that:

The Staff has not demonstrated that there is no unresolved conflict concerning alternative uses of available resources.

But we observe (*see* I.A., below) that Staff has carefully considered the commitment of resources and found that it is negligible. Furthermore, the intervenors have not introduced any evidence or raised any inferences through cross-examination that challenge the Staff's conclusion concerning the negligible commitment of resources.

We also conclude that direct testimony and cross-examination have failed to cast any doubt on the credibility or completeness of the EIA prepared by Staff. As a result, we have reached conclusions quite similar to those proposed to us by Consumers Power Company (applicant). Since we agree so completely with applicant on this subject, we adopt (with minor editorial and substantive modifications) its findings and conclusions, which were presented to us clearly and

thoroughly, in a format we suggested to the parties. Those findings and conclusions appear, without quotation marks, in the following section of our opinion.

I. ENVIRONMENTAL CONTENTIONS

A. Statement of Facts

In *Consumers Power Company* (Big Rock Point Nuclear Plant), ALAB-636, 13 NRC 312 (1981), the Atomic Safety and Licensing Appeal Board held that Section 102(2)(C) of NEPA, 42 U.S.C. §4332(2)(C), did not require preparation of an environmental impact statement ("EIS") covering the effects of the additional term of reactor operation that the proposed expansion of the Big Rock Point spent fuel pool would permit. 13 NRC at 333. This decision reversed a previous determination by this Board in its Memorandum and Order on NEPA Review, LBP-80-25, 12 NRC 355 (1980). The Appeal Board did not preclude a finding on remand that the direct effects of pool expansion required preparation of an EIS, but directed this Board to await the issuance of the NRC Staff's environmental document before determining this issue. 13 NRC at 333. The Appeal Board likewise left open the question whether, if an EIS were not required, a discussion of alternatives might nonetheless be mandated by Section 102(2)(E) of NEPA, reasoning that a determination would be premature in the absence of a record. 13 NRC at 332.

On May 10, 1982, the Staff issued a revised Environmental Impact Appraisal ("EIA"), originally issued on May 15, 1981.¹ The Staff concluded that Section 102(2)(C) of NEPA did not require preparation of an EIS:

The NRC Staff has reviewed this proposed facility modification relative to the requirements set forth in 10 CFR Part 51 of the Commission's regulations. The Staff has determined, based on this assessment, that the proposed license amendment will not significantly affect the quality of the human environment. Therefore, the Commission has determined that an environmental impact statement need not be prepared, and that, pursuant to 10 CFR 51.5(c), the issuance of a negative declaration to this effect is appropriate.

EIA at 14.

Moreover, the EIA contains the basis for Staff's conclusion that Section 102(2)(E) of NEPA does not require a consideration of alternatives in this case. Staff concluded that expansion of the Big Rock spent fuel pool "will not result in any significant change in the commitment of water, land and air resources." EIA at 13. The most significant use of resources will be that of the stainless steel used to fabricate the racks; but the Staff concluded that in comparison to the amount of

¹ Environmental Impact Appraisal by the Office of Nuclear Reactor Regulation Relating to the Modification of the Spent Fuel Storage Pool Facility Operating License No. DPR-6, Consumers Power, Big Rock Plant, Docket No. 50-55, Revised May 10, 1982 (Staff Exhibit No. 3).

stainless steel used annually in the United States, the amount to be used in the racks is "insignificant" and there are no unresolved conflicts with respect to it (EIA at 13-14). Although the EIA as originally issued contained a voluntary discussion of alternatives, the revised document omitted this discussion in accordance with the Staff's conclusion that NEPA does not require consideration of alternatives to the proposed action.

On March 1, 1982, during a telephone conference held in this case, the Board Chairman requested that the parties brief "the outstanding NEPA issues left after the Appeal Board's decision." Tr. 267. Specifically, the Chairman requested that the parties brief the questions (a) whether, in light of the Staff's EIA, an EIS is required in this proceeding, and (b) whether the Board is required to consider alternatives to the completion of the spent fuel pool. On April 27, 1982, Licensee filed a brief on the status of the remaining NEPA issues. On May 17, 1982, the Staff filed a brief expressing agreement with the applicant's two main arguments, characterized by the Staff as follows:

(1) the decision to require an EIS should be made only after an evidentiary determination on the adequacy of the Staff's EIA, (2) a discussion of alternatives is not proper prior to litigating the adequacy of the EIA's finding that there are no unresolved conflicts about alternative uses of available resources . . .

NRC Staff Brief on NEPA Issues at 1-2.

On June 7 through June 12, 1982, hearings were held in Boyne Falls, Michigan for the presentation of evidence on the license amendment. The record was closed on several issues at the conclusion of the hearings, including the issue regarding the adequacy of the Staff's EIA. At the hearing the EIA, marked as Staff Exhibit 3, was admitted into evidence pursuant to 10 CFR §2.743(g) (Tr. 2286). The document was sponsored by Staff witnesses Emch and Donohew.

B. Applicable Law

Section 102(2)(C) of NEPA, 42 U.S.C. §4332(2)(C), requires preparation of an EIS with respect to every recommendation by a federal agency of a major federal action significantly affecting the quality of the human environment.

Section 102(2)(E) of NEPA, 42 U.S.C. §4332(E), provides that "all agencies of the Federal Government shall —develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources."

The Staff has the responsibility of determining the baseline data regarding environmental impacts and producing a final environmental statement which is necessarily a prime ingredient in the ultimate fashioning of the NEPA determinations by the agency's adjudicatory tribunals. *Texas Utilities Generating Company, et al.* (Comanche Peak Steam Electric Station, Units 1 and 2), ALAB-260, 1 NRC

51, 55 (1975). The Staff's environmental documents must be introduced into evidence at the hearing before the Licensing Board. 10 CFR §51.52(b)(1). The Staff's environmental documents are subject to review and amendment by the Licensing Board in an adjudicatory setting, in which all parties with a demonstrated interest may participate in evidentiary hearings. *New England Power Company, et al.* (NEP, Units 1 and 2), LBP-78-9, 7 NRC 271, 279 (1978).

In *Consumers Power Company* (Big Rock Point Nuclear Plant), ALAB-636, 13 NRC 312 (1981), the Appeal Board held that a reasonable application of NEPA to this license amendment proceeding does not require consideration of the continued operation of the Big Rock Point plant, whose operation already has been licensed. 13 NRC at 333.

C. Discussion

1. Status of NEPA Issues

In light of the Appeal Board's decision in *Big Rock Point*, ALAB-636, *supra*, there are only two environmental issues for us to decide. The first issue is whether in light of the Staff's EIA, an EIS is required regarding the direct environmental impacts of the proposed spent fuel pool expansion. This issue must be resolved by considering the adequacy of the analysis supporting Staff's conclusion that the proposed action does not constitute a major federal action significantly affecting the human environment. If Staff's conclusion is supported by the evidence, there is no need for preparation of an EIS under the statute. In particular, we must consider whether any evidence of record, either presented directly by another party or elicited on cross-examination of a Staff witness, casts doubt on the soundness or completeness of the Staff's analysis.

The second issue is whether, if preparation of an EIS is not necessary, a discussion of alternatives is required by Section 102(2)(E) of NEPA. Again, we believe this issue must be resolved by considering the adequacy of the Staff's EIA. The Staff concludes that there will be no significant change in the use of land, water or air resources. Although 63,000 pounds of stainless steel will be used in the fabrication of the new fuel racks, Staff concludes that there are no unresolved conflicts about alternative uses of this mineral resource. If these Staff conclusions are supported by the evidence, there is no need for a discussion of alternatives under Section 102(2)(E) of NEPA.

The Staff argued in its pretrial brief that the meaning of "available resources" in Section 102(2)(E) was intended to be limited to natural resources. Staff Brief at 5-8. The Staff pointed out, *inter alia*, that this was the view taken in at least two prior spent fuel pool expansion proceedings, *Portland General Electric Company, et al.* (Trojan Nuclear Plant), ALAB-531, 9 NRC 263, 266 (1979), and *Virginia Electric and Power Company* (North Anna Nuclear Power Station, Units 1 and 2),

ALAB-584, 11 NRC 451, 458 (1980). Moreover, since the Appeal Board in *Big Rock Point*, ALAB-636, *supra* at 332, cited *North Anna* with approval, the Staff argues there is an implication that it agreed with this characterization of “resources.” We do not believe it is necessary for us to determine whether the Licensing Board in *Dairyland Power Cooperative* (La Crosse Boiling Water Reactor), LBP-80-2, 11 NRC 44, 73-77 (1980) may have been in error in defining the term “resources” in the statute. We are at a loss to find any evidence of record which suggests that there might be an unresolved conflict about alternative uses of available resources.

We are aware that in *La Crosse*, the Licensing Board held that the nuclear plant itself was a resource within the meaning of the statute and that since expansion of the spent fuel pool would permit continued plant operation, an unresolved conflict existed as to the use or nonuse of the plant. We believe, however, that this decision, which applied to a provisionally licensed facility that had not been subjected to any prior environmental balance concerning the need for the plant (*id.* at 74), was limited in its applicability to this case by the Appeal Board’s decision in *Big Rock Point*, ALAB-636, *supra*. The Appeal Board’s holding that a reasonable interpretation of NEPA did not require consideration of the environmental impacts of the continued plant operation made possible by pool expansion was made in the context of Section 102(2)(C) of NEPA. Nonetheless, we believe that the Appeal Board’s reasoning is equally applicable to Section 102(2)(E). Because continued plant operation is beyond the scope of the environmental inquiry in this proceeding, there can be no unresolved conflicts about the use or nonuse of the entire plant. (Because our determination on this issue is adverse to Christa-Maria, we need not reach the merits of Staff’s argument in its reply brief that this issue was not properly raised.)

With respect to both of the remaining NEPA issues, therefore, the relevant inquiry is the same: does the evidentiary record, including the evidence marshaled in the EIA itself and any developed during the hearing on this issue, support the relevant conclusions reached by the Staff in the EIA? If it does, there is no need for preparation of an EIS or a consideration of alternatives.

2. *The Evidentiary Record*

Our review of the EIA convinces us that the proposed spent fuel pool modification would not cause any significant environmental impacts and would not involve any unresolved conflicts about alternative uses of resources. Offsite radiological impacts, in the form of increased releases to the atmosphere, are conservatively estimated to be so small that they can only be characterized as insignificant (Section 5.3.2). No increased releases to receiving waters are expected (Section 5.3.4). Likewise, no increase in solid radwaste from the spent fuel pool purification system is expected, and a conservatively estimated increase in the amount of

such radwaste to be shipped from the plant annually would have no significant environmental impact (Section 5.3.3). The occupational radiation exposure that will be incurred in the reracking process is quite small compared to the total annual occupational exposure burden, and the incremental burden from the presence of additional, relatively old, spent fuel in the pool is negligible (Section 5.3.5).

The only nonradiological impact of the proposed action will be a slight increase in the plant thermal discharge to Lake Michigan. This increase would amount to less than 0.04% of the thermal discharge from the plant's main condenser (Section 5.4). At the hearing, Mr. Axtell testified that the change in temperature across the main condenser averages about 15 degrees (Tr. 2303). Thus the temperature increase resulting from the modification, 0.04% of 15 degrees, will be insignificant.

Because the proposed modification will not change the dimensions of the pool, it is obvious that no additional commitment of land is involved (Section 5.1). As regards water use, there will be a slight incremental heat load on the SFP cooling system, but this heat load — and the accompanying need to replace water lost through evaporation — will not exceed the design basis (Section 5.2). The Appeal Board in *Consumers Power Company*, ALAB-636, *supra* at 332, reasoned that NEPA had application only when there were environmental *changes* to evaluate. Although the Appeal Board was considering Section 102(2)(C) of NEPA, we believe this reasoning is equally applicable to Section 102(2)(E).

Approximately 63,000 pounds of stainless steel will be required to fabricate the new fuel racks. There is no evidence that calls into question Staff's conclusion that there are no unresolved conflicts about the use of this material (Section 7.2.2).

Nothing put into evidence at the hearing in any way modifies our view that the Staff's conclusions in the EIA have adequate evidentiary support. The Intervenor presented no direct testimony regarding the adequacy of the EIA. The Board raised no questions regarding the adequacy of the Staff's conclusions. The intervenors did not elicit on cross-examination any testimony which might conceivably cast doubt on the adequacy of any of the Staff's analyses or conclusions.

Intervenor's questions on Section 5.2, "Water Use," were abandoned (Tr. 2297). Intervenor's questions, supplemented by the Board, concerning Section 5.4, "Non-radiological Effluents," elicited testimony showing how negligible the increase in the temperature of the plant discharge caused by pool modification would be (Tr. 2300-04). Intervenor's questions about the environmental impacts of thermal discharge in the lake were held improper because they formed the specific subject of a contention that intervenors had previously withdrawn (Tr. 2309). Intervenor's questions on Section 5.3.2, "Radioactive Material Released to the Atmosphere," were abandoned without eliciting any testimony.

A document marked as Intervenor's Exhibit 11 for identification, but not introduced into evidence, was shown to witnesses Emch and Donohew. It purported to be a study showing that a trend to lower birth weight was found in

Charlevoix County and adjacent counties but was more pronounced in Charlevoix County (Tr. 2320). The Board Chairman asked Mr. Emch whether in preparing the EIA the Staff had considered the possibility that releases from the Big Rock Point plant might cause a reduction in birth weight in the vicinity (Tr. 2320). Mr. Emch testified that generic consideration had been given to this question in that the NRC considers possible genetic and actual biological effects of radiation on unborn children and the mother, but not when the releases are as small as those the proposed modifications could cause (Tr. 2321). The Board Chairman asked Mr. Emch as a hypothetical question, what significance it would have if there were a valid study showing reduced birth weight in the area of the plant (Tr. 2321). Mr. Emch testified that such a study would have no particular significance unless it included a finding that such a trend was caused by radiation (Tr. 2322). Mr. Emch testified further that nothing in the article suggested that operation of the Big Rock Point plant might be causing a reduction in birth weights in Charlevoix County.

Thus, no doubt whatever has been cast on the Staff's conclusion that the proposed spent fuel pool expansion will have no significant environmental impacts. Similarly, the Staff's omission of a discussion of alternatives in the EIA was based on its conclusion in Section 7.2 that there are no unresolved conflicts about alternative uses of resources raised by the proposed action. Intervenors did not even cross-examine the Staff witnesses with regard to this issue. Thus, the hearing process cast no doubt whatever on this conclusion.

II. PROCEDURAL RULINGS

The parties are hereby directed that all future briefs should explain, possibly within a parenthetical phrase following the case citation, the facts of a case that are being relied on and the relationship between the facts of the case and the proposition for which the case is offered. In the alternative, a party may indicate that it is relying on dictum and cite in full the relevant passage of the case. Failure to comply with these directions may cause the Board to ignore the nonconforming citations.

The schedule of this case is modified so that replies must be filed within ten days of the filing of any brief due after the issuance of this order.

ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 15th day of September 1982 ORDERED:

(1) Christa-Maria, *et al.*'s contentions concerning the need for the Staff of the Nuclear Regulatory Commission (Staff) to review alternatives to the expansion of the Big Rock Point spent fuel pool and concerning the inadequacy of the Environmental Impact Appraisal issued by the Staff on May 15, 1981, are dismissed.

(2) The procedural rulings contained in Section II of the accompanying memorandum shall be effective on issuance of this Order.

(3) Within ten (10) days after service of this decision, a party may appeal by filing exceptions to paragraph (1) of this Order or Part I of this decision or any part thereof, pursuant to the provisions of 10 CFR §2.762, which imposes requirements of conciseness and particularity and provides for the subsequent filing of appeal briefs.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE**

**Dr. Oscar H. Paris
ADMINISTRATIVE JUDGE**

**Mr. Frederick J. Shon
ADMINISTRATIVE JUDGE**

Bethesda, Maryland

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Dr. Jerry R. Kline
Mr. Frederick J. Shon

In the Matter of

Docket Nos. 50-440-OL
50-441-OL

CLEVELAND ELECTRIC ILLUMINATING
COMPANY, *et al.*

(Perry Nuclear Power Plant, Units 1 & 2)

September 15, 1982

The Licensing Board denies admission of a contention on dose levels to human beings from routine emissions from the Perry plant because the intervenor failed to show good cause for late filing. Intervenor had argued that the issue could be raised because it had appeared for the first time in the Draft Environmental Statement for Perry, but intervenor had no answer for the opposing argument that the same matter had been raised in the Final Safety Analysis Report, issued months earlier.

The Board also considered whether to raise this issue *sua sponte* but it concluded that the Commission had already considered the matter in several earlier proceedings and that *sua sponte* consideration was not appropriate.

**RULES OF PRACTICE: CONTENTIONS; GOOD CAUSE FOR
LATE FILING**

Discussion of an issue in the Draft Environmental Statement does not provide good cause for late filing of a contention, if the same material was included in the Final Safety Analysis Report (FSAR) filed by the applicant.

RULES OF PRACTICE: *SUA SPONTE* ISSUE

If a contention is excluded from a proceeding because there is no good cause for late filing, the Board should nevertheless consider whether to declare the issue to be an important safety or environmental issue and to raise that issue *sua sponte*.

**MEMORANDUM AND ORDER
(Concerning Sunflower's Late-Filed Radiation-Dose Contention)**

On July 13, 1982, Sunflower Alliance, Inc., *et al.* (Sunflower), filed a contention alleging that the Staff of the Nuclear Regulatory Commission (Staff) "has not correctly calculated the dose levels to real human beings from routine emissions from the Perry Nuclear Power Plant." Sunflower stated that it had good cause for late filing because the contention was based on the Draft Environmental Statement for Perry Nuclear Power Plant, NUREG-0884 (March 1982) (DES) and on *Natural Resources Defense Council, Inc. v. United States Nuclear Regulatory Commission*, 685 F.2d 459 (D.C. Cir. 1982) (Table S-3 Decision).

Based on arguments that Cleveland Electric Illuminating Company, *et al.* (applicant) and Staff presented in their responses to this contention and that Sunflower did not address directly in its required reply, we find that this contention should not be admitted because Sunflower lacked good cause for late filing. Sunflower should have known how the Commission calculates dose levels well before the DES was issued. Furthermore, the Table S-3 Decision is irrelevant to the calculation of radiation doses emanating directly from Perry; it was concerned with proper treatment of the uranium fuel cycle, including waste disposal.

I. GOOD CAUSE FOR LATE FILING

A. Unrefuted Statements About the DES

Applicant, in its July 28, 1982 filing, stated that virtually all the disagreements Sunflower has with how the Staff computes dose levels to humans from routine reactor emissions can be traced to its disagreements with Regulatory Guide 1.109, "Calculations of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR 50, Appendix I," October 1979 (Rev. 1) and with NUREG-0016, "Calculation of Releases of Radioactive Materials in Gaseous and Liquid Effluents from Boiling Water Reactors (BWR-GALE Code)," January 1979 (Rev. 1).

Both applicant and Staff indicated that these documents were referenced in applicant's Final Safety Analysis Report (FSAR) in several sections, including

§§11.2.3.4, 11.3.3.3, 12.4.4.4, 3.5.2.4, 3.5.2.5 and 3.4.3.3. Consequently, the DES did not provide Sunflower with any new information about how radiation doses would be calculated in this proceeding. See *Wisconsin Electric Power Co.* (Koshkonong Nuclear Plant, Units 1 and 2), CLI-74-45, 8 AEC 928 (1974) (contentions should be filed based on the information available prior to issuance of a DES and SER).

Nevertheless, Sunflower's replies do not in any way clarify how the DES provided it with new information. Indeed, Sunflower's Response to Applicant's Answer, September 3, 1982, agrees that "the draft environmental statement does not contain any new information."

Under the circumstances, we have no choice but to agree with all the parties that the DES contains no new information relevant to this contention and that it therefore does not contain good cause for late filing.

B. Table S-3 Case

Applicant stated that it was at a complete loss to understand how the Table S-3 Case was at all relevant to Sunflower's contention. Staff seems to have been so much at a loss that it did not discuss this alleged ground for late filing at all. Nevertheless, Sunflower's reply did not address this point. Consequently, we agree with applicant (and, implicitly, Staff) that this legal decision did not provide any cause for late filing.

C. Surprise Statements of Cause for Late Filing

In its Response to NRC Staff (August 30, 1982), Sunflower alleged (for the first time) that it had good cause for late filing because of "the Savannah River Plant Study" and "the study by Alice Stewart (*British Journal of Epidemiology and Community Health*)."

However, Sunflower does not explain what may be found in these articles that could not be found previously in other articles, and the Sunflower Response to Applicant's Answer merely characterizes at least one of these studies, without further explanation, as confirming the earlier conclusions of Ernest Sternglass. Consequently, we conclude that Sunflower has not shown that these new studies establish good cause for late filing.

D. Other Factors

While we have previously found that Sunflower's participation with respect to other contentions may reasonably be expected to assist in developing a sound record, we cannot do so with respect to this contention. None of the Sunflower filings even cited the applicable regulatory guide, NUREG or previous cases, even

after attention was called to these materials by the other parties. Furthermore, Sunflower failed to reply to applicant's charges that it had made several serious misstatements, including apparent failure to understand that linearity of dose-effect is a basic concept of the applicable NRC regulations and that all detectable emitted radionuclide materials are considered in the dose commitment calculations. Applicant's Response at 21, 24; *see also id.* at 27-32.

E. Conclusion

Based on our review of each of Sunflower's arguments, we conclude that it has not shown good cause for late filing of this contention. It also has not shown that its contribution would assist in developing a sound record. Were we to have found lack of good cause alone, with other factors for admission of late contentions in balance, we would have excluded this contention. Consequently, given the additional negative factor related to Sunflower's potential contribution, upon balancing the factors necessary for accepting a late contention, we conclude that good cause for late filing has not been shown and that this contention may not be admitted as an issue in this proceeding. 10 CFR §2.714(a)(1).

II. POTENTIAL *SUA SPONTE* ISSUE

Since the Board has the prerogative, under the regulations, to consider raising serious issues *sua sponte*, it has the responsibility of reviewing materials filed before it to determine whether the parties have brought such an issue before it. 10 CFR §2.760a. This is particularly necessary when an issue is excluded from the proceeding because it has not been properly raised rather than because it has been rejected on its merits.

In this instance, however, Sunflower has not brought to our attention anything that has not been repeatedly considered by the Commission. *Trustees of Columbia University in the City of New York*, ALAB-50, 4 AEC 849 (1972); Report of the Advisory Committee on the Biological Effect of Ionizing Radiation, "The Effects on Populations of Exposure to Low Levels of Ionizing Radiation," ("*BEIR I*", 1972) at 178-79; *Metropolitan Edison Co.* (Three Mile Island, Unit 2), CLI-80-13, 11 NRC 519, 531-32 (1980); NUREG-0668, "Staff Review of 'Radioecological Assessment of the Why1 Nuclear Power Plant'" (June 1980).

Our review persuades us that we have no basis to declare this to be an important safety issue.

ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 15th day of September, 1982,

ORDERED

Sunflower Alliance, Inc., *et al.*'s Motion for Leave to Submit Additional Contention, filed July 13, 1982, is denied.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE**

**Jerry R. Kline
ADMINISTRATIVE JUDGE**

**Frederick J. Shon
ADMINISTRATIVE JUDGE**

Bethesda, Maryland

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

James A. Laurenson, Chairman
Dr. Walter H. Jordan
Dr. Jerry Harbour

In the Matter of

Docket No. 50-322-OL-2
ASLBP No. 82-478-05-OL
(Security Proceeding)

LONG ISLAND LIGHTING COMPANY
(Shoreham Nuclear Power Station,
Unit 1)

September 16, 1982

Upon referral from the Commission, the Licensing Board authorizes the release to two of intervenor's security consultants/experts of two portions of a restricted Appeal Board decision [*Diablo Canyon*, ALAB-653 (1981) (Restricted)] regarding the definition of design basis threat and interpretation of regulations concerning the appropriate number of armed responders.

RULES OF PRACTICE: DISCOVERY; SECURITY PLANS

Intervenor county government established requisite need of two of its security consultants/experts for access to two portions of restricted Appeal Board decision regarding definition of design basis threat and number of armed responders, even though those portions also contain minimal amount of specific information concerning security plan at another nuclear plant.

RULES OF PRACTICE: DISCOVERY; SECURITY PLANS

Where Commission previously authorized release of two portions of restricted Appeal Board decision to attorneys for intervenor county government, the same portions of that decision will be released to intervenor's consultants/experts who have filed testimony on the areas discussed in the Appeal Board decision.

RULES OF PRACTICE: DISCOVERY; SECURITY PLANS

Release of portions of restricted Appeal Board decision to intervenor's consultants/experts will be conditioned upon their execution of affidavits of non-disclosure of the plant physical security information contained in that decision.

RULES OF PRACTICE: DISCOVERY; SECURITY PLANS

Security plans for nuclear plants are deemed to be commercial or financial information pursuant to 10 CFR §2.790(d) and may only be disclosed to counsel and expert witnesses who have a need to know after application of a balancing of interests test.

MEMORANDUM, ORDER AND NOTICE OF SECOND IN CAMERA CONFERENCE OF COUNSEL

I. Suffolk County Request for Access by Its Security Experts/Consultants to Appeal Board Decision in Diablo Canyon (Security) ALAB-653

A. Procedural History

On July 25, 1982, counsel for Long Island Lighting Company (hereinafter "LILCO") requested that two of LILCO's attorneys be given access to portions of the Appeal Board's opinion in *Diablo Canyon*, ALAB-653 (1981) (Restricted) dealing with the definition of the design basis threat and the interpretation of the Commission's regulations regarding the appropriate number of armed responders. Counsel for Suffolk County agreed with this request and further requested that security experts for the parties be granted, *inter alia*, access to the same parts of the opinion. On July 30, 1982, the Commission directed that certain attorneys for

LILCO and Suffolk County be given access to the parts of the opinion specified above. The Commission further stated:

“Intervenor Suffolk County’s request for access by its consultants is referred to the Licensing Board. Such access should be granted only if Suffolk County demonstrates the requisite need to know. 10 CFR 73.21(c)(vi). See 46 Fed. Reg. 51718, 51719-20 (October 22, 1981). PG&E is to be provided an opportunity to make a special appearance on the request if it so desires.” *Long Island Lighting Company*, (Shoreham Nuclear Power Station, Unit 1), CLI-82-17, 16 NRC 48, 49 (1982).

On July 30, 1982, the Commission also released a “version of ALAB-653 with all protected information deleted.” *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-82-19, 16 NRC 53 (1982).

On August 6, 1982, Suffolk County filed a request with the Licensing Board for access by its security experts/consultants to the above-mentioned portions of the restricted opinion. On August 13, 1982, Pacific Gas and Electric Company (hereinafter “PG&E”) opposed the County’s request. On August 20, 1982, the NRC Staff also opposed the request but conceded that the County made a *prima facie* showing of the requisite need to know. LILCO did not respond to the County’s request. However, at a Conference of Counsel held on September 13, 1982, counsel for LILCO opposed the County’s request. At that time, PG&E and all of the parties herein were represented by counsel and presented oral arguments concerning the request.

B. Ruling of Board on Suffolk County Request

We note that the initial request to the Commission for access to portions of the Appeal Board decision in *Diablo Canyon*, ALAB-653 (Restricted), was made by counsel for LILCO. Curiously, after the Commission granted that request, LILCO’s counsel have chosen not to examine the material to which they requested access.

As noted above, the instant request was remanded to the Board by the Commission with instructions that “such access should be granted only if Suffolk County demonstrates the requisite need to know.” PG&E, LILCO, and the Staff oppose the County’s request for different reasons. No one contends that the County has not established at least a *prima facie* showing of “the requisite need to know.” PG&E is the principal opponent of this request for the following reason: if this request is granted, the material will be released in each and every plant security proceeding hereafter, thereby increasing the risk of improper release or disclosure of the details of the Diablo Canyon security plan. On the other hand, Suffolk County contends that its experts/consultants need this information to intelligently evaluate LILCO’s security plan for Shoreham. The County’s experts, Brian M. Jenkins and

Marc W. Goldsmith, have already filed their testimony in this proceeding concerning contentions dealing with the design basis threat and the required number of armed responders.

The test to be applied to a request like the one before us was first articulated by the Appeal Board in *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-410, 5 NRC 1398 (1977). There PG&E also argued that “the greater the number of individuals who know the details of the [security] plan the greater the risk that the details will become public knowledge.” *Id.* at 1401. The Appeal Board rejected this argument, held that plant security plans are “deemed to be commercial or financial information” pursuant to 10 CFR §2.790(d), and applied a “balancing of the interests” test to the disclosure of the security plan to counsel and expert witnesses. *Id.* at 1402. The Appeal Board went on to limit disclosure to portions of the security plan which were relevant to the contentions and subject to a protective order. Thereafter, when the Appeal Board was conducting its hearing concerning the security plan at Diablo Canyon, it issued a second prehearing conference order authorizing release of protected information in the physical security plan to intervenor’s counsel and expert witnesses upon execution of an affidavit of non-disclosure. *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-592, 11 NRC 746 (1980). Finally, the Commission reviewed PG&E’s contention and the Appeal Board decisions above and affirmed those decisions, as pertinent here, as follows:

In its petition for review PG&E argues that the physical security plan should not be made available to petitioners because the best method of preventing public disclosure of this sensitive document is to make it available to the fewest number of individuals possible. The Commission recognizes PG&E’s concern, but emphasizes that intervenors in Commission proceedings may raise contentions relating to the adequacy of the applicant’s proposed physical security arrangements, and that the Commission’s regulations, 10 CFR 2.790, contemplate that sensitive information may be turned over to intervenors in NRC proceedings under appropriate protective orders. In this proceeding the Appeal Board in ALAB-410, 5 NRC 1398 (1977) and in its Second Prehearing Conference Order of April 11, 1980 (ALAB-592), has set forth guidelines on when and under what conditions physical security plans may be made available to intervenors. The Commission has reviewed these orders, and with the one exception noted below, endorses the guidelines developed by the Appeal Board. We believe that the Board has done a commendable job of interpreting the law and balancing competing policy interests, and has handled the sensitive issues raised by requests for access to the Diablo Canyon physical security plan wisely. [footnotes omitted] *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Unit Nos. 1 and 2), CLI-80-24, 11 NRC 775, 777 (1980).

Applying the above law to the instant controversy, we conclude that we should also apply a "balancing of interests" test to the request at hand. PG&E is correct in its assertion that the portions of ALAB-653 in question contain information about the Diablo Canyon security plan and that the possibility of an unauthorized disclosure of security information increases as the number of people who have that information increases. On the other hand, we have a request to release the material to two expert witnesses who will testify for the County on the contentions dealing with the design basis threat and the number of armed responders needed at Shoreham. Thus, the portions of ALAB-653 are directly relevant to their testimony. Moreover, the Commission has already authorized release of the same material to counsel for the County. In essence, LILCO and Staff object to the release of the material at this time because the security contentions may be settled before hearing. However, we find that the county's experts may need this information in assessing offers of settlement and that any further delay in the release of this material may result in a postponement of the hearing and a possible delay in licensing the plant. To postpone the release of this material in the hope or expectation that the case may be settled would be to chart a dangerous course. If the case did not settle, a delay in the commencement of the hearing could be anticipated because the experts/consultants would have to revise their testimony in light of the Appeal Board decision in Diablo Canyon.

The Board reviewed the version of ALAB-653 released by the Commission on July 30, 1982. That version, with all protected information deleted, is insufficient for the purposes of expert witnesses who will be testifying in the instant proceeding. Moreover, the amount of specific information concerning the Diablo Canyon security plan contained in the requested portions of ALAB-653 is minimal. Thus, after balancing the interests of all those concerned, we find that Suffolk County has established a requisite need for its experts/consultants to know the Appeal Board's definition of the design basis threat and interpretation of the Commission's regulations regarding the appropriate number of armed responders. The other parties and PG&E failed to rebut the County's showing of a need to know. The release of this material is pursuant to 10 CFR §73.21(c)(vi); 10 CFR §2.790; and 10 CFR §2.744(e).

Thus, the County's request for access by its consultants, Brian M. Jenkins and Marc W. Goldsmith, "to those portions of ALAB-653 dealing with the definition of the design basis threat and the interpretation of the Commission's regulations regarding the appropriate number of armed responders" is granted subject to the following restrictions: (1) Messrs. Jenkins and Goldsmith must execute new affidavits of non-disclosure applicable to the Diablo Canyon physical security information similar to the affidavits previously executed by counsel pursuant to CLI-82-17; and (2) this information will be made available to the consultants ten (10) days after the date of this Order.

II. Stipulation of Expanded Security Contention

At the Conference of Counsel on September 13, 1982, the parties stated that they would file a stipulation regarding a revised and expanded Security Contention No. 7. This stipulation will encompass a previous Suffolk County health and safety contention dealing with "human factors." This stipulation shall be filed with the Board on or before October 1, 1982.

III. Supplemented Status Report Concerning Settlement

Pursuant to agreement among the parties, the Board will permit the parties to continue their settlement negotiations herein without imposing any additional requirements until October 1, 1982. On that date the parties shall supplement and update their most recent status report of settlement dated September 7, 1982. The Supplemental Status Report shall be delivered to the Board by Friday, October 1, 1982.

IV. Notice of Second *In Camera* Conference of Counsel

Pursuant to agreement among the parties, a second *in camera* Conference of Counsel will be held on Tuesday, October 5, 1982 commencing at 9:30 a.m. at the Nuclear Regulatory Commission Hearing Room located at 4350 East-West Highway, 5th Floor, Bethesda, Maryland. That Conference of Counsel will be held to discuss and consider the following:

1. Status of settlement.
2. Date and place of hearing.
3. Date of Board visit to Shoreham prior to hearing.
4. Last day for filing Motions for Summary Disposition and responses.
5. Any other matter raised by the Board or parties.

WHEREFORE, IT IS ORDERED this 16th day of September, 1982, that Suffolk County's request for access to certain portions of ALAB-653 is GRANTED pursuant to 10 CFR §2.744(e) and subject to the conditions stated herein;

IT IS FURTHER ORDERED that on or before October 1, 1982, the parties shall file a stipulation concerning a revised and expanded security contention 7 and a supplemental updated status report of settlement.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**James A. Laurenson, Chairman
ADMINISTRATIVE LAW JUDGE**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Ivan W. Smith, Chairman
Dr. Walter H. Jordan
Dr. Donald P. deSylva**

In the Matter of

**Docket Nos. STN-50-488
STN-50-489
STN-50-490**

**DUKE POWER COMPANY
(Perkins Nuclear Station,
Units 1, 2 and 3**

September 20, 1982

The Licensing Board authorizes the withdrawal without prejudice of the application for construction permits for the Perkins Nuclear Station, denies Intervenor's motion to dismiss the Perkins application with prejudice, and denies the Intervenor's request for attorney's fees and litigation expenses.

LICENSING BOARD: DISMISSAL OF PROCEEDING

Licensing Boards under 10 CFR 2.707(a) may authorize the withdrawal of an application after the notice of hearing has issued on such terms as it may prescribe, but any terms prescribed must be related to any legal harm to parties or the public that a withdrawal would cause.

LICENSING BOARD: DISMISSAL OF PROCEEDING

Federal rules favor withdrawal without prejudice where no party will be harmed thereby. The possibility of another hearing on the application standing alone does

not constitute legal harm, and does not in itself justify a conditional withdrawal. Fed. R. Civ. P. 41(a)(1), (2); *LeCompte v. Mr. Chip, Inc.*, 528 F.2d 601, 604 (5th Cir. 1976).

LICENSING BOARD: DISMISSAL OF PROCEEDING

A Licensing Board may attach reasonable conditions on a withdrawal without prejudice to protect parties and public from legal harm; or if legal harm is unavoidable, the Licensing Board may order a dismissal with prejudice but only to the extent necessary to avoid legal harm.

LICENSING BOARD: DISMISSAL OF PROCEEDING

The Applicant would have the option of selecting reasonable conditions on a withdrawal without prejudice, including the payment of intervenors' attorney's fees, or a withdrawal with prejudice as to specific issues. *Yoffe v. Keller Indus., Inc.*, 580 F.2d 126, 131, n.13 (5th Cir. 1978).

LICENSING BOARD: DISMISSAL OF PROCEEDING; PAYMENT OF INTERVENORS' ATTORNEY'S FEES

A distinction must be made between the American rule which bars an award of attorney's fees to the prevailing party absent a specific statute authorizing payment, as reconfirmed in *Alyeska Pipeline Serv. v. Wilderness Soc.*, 421 U.S. 240 (1975), and requiring the reimbursement of attorney's fees as a condition of withdrawal of an application without prejudice. The latter is not an award for winning anything, but is to save a party from the expense and effort of preparing a defense twice because of the withdrawal without prejudice.

LICENSING BOARD: DISMISSAL OF PROCEEDING; PAYMENT OF INTERVENORS' ATTORNEY'S FEES

There is nothing about NRC practice and regulations which bars the payment of money as a condition for withdrawal of an application without prejudice.

LICENSING BOARD: DISMISSAL OF ACTION WITH OR WITHOUT PREJUDICE; PAYMENT OF ATTORNEY'S FEES

An unusual situation prevails in an NRC proceeding with respect to a dismissal in that (1) it is a mandatory licensing proceeding, not a simple adversary litigation, and (2) the dismissal is sought after a hearing and decision on the merits.

LICENSING BOARD: DISMISSAL OF ACTION WITH OR WITHOUT PREJUDICE; PAYMENT OF ATTORNEY'S FEES

Where an intervenor has lost on the merits of an issue, it will suffer no legal harm from a dismissal of an application without prejudice, because the worst that can beset an intervenor in that case is that it will be afforded an unearned second opportunity to prevail on the issue.

LICENSING BOARD: DISMISSAL OF ACTION WITH OR WITHOUT PREJUDICE; PAYMENT OF ATTORNEY FEES

Intervenors have standing to seek a dismissal with prejudice and attorney's fees. Subsumed in the right to intervene with NRC proceedings is the right to enjoy the benefits of the ensuing litigation; to preserve any victory for later use in a renewed litigation, or to be saved from legal harm if the need arises again to litigate an issue upon which intervenors prevailed.

**MEMORANDUM AND ORDER
AUTHORIZING WITHDRAWAL OF APPLICATION FOR
CONSTRUCTION PERMIT WITHOUT PREJUDICE**

Background

Duke Power Company filed motions on March 2, 1982 with this Board and with the Appeal Board seeking leave to withdraw without prejudice Duke's application for construction permits for the Perkins Nuclear Station and requesting that the Boards terminate as moot the proceedings pending respectively before them. Intervenors, Mary Apperson Davis and the Yadkin River Committee, opposed the motion and counter-requested instead that the applicant be dismissed with prejudice and that Intervenors be awarded their costs in this proceeding. The NRC Staff stated that it did not oppose Duke's motion to withdraw but recommended that this Board decide the matter in the first instance. The Appeal Board agreed, and in

ALAB-668, 15 NRC 450 (1982), noted that it is for the Licensing Board to pass upon the motion in the first instance. The Appeal Board also vacated the three partial initial decisions which had not achieved finality: LBP-78-25, 8 NRC 87 (1978); LBP-78-34, 8 NRC 470 (1978); and LBP-80-9, 11 NRC 310 (1980). We requested the parties to submit new pleadings and to brief the issues more thoroughly. They have refiled their papers and the matter is ripe for initial disposition.¹

Jurisdiction and Authority

Withdrawal of an application after the issuance of the Notice of Hearing shall be on such terms as the presiding officer may prescribe. 10 CFR 2.107(a). In determining whether the withdrawal shall be with or without prejudice, the Appeal Board in ALAB-668 instructed us to apply the guidance provided in *Philadelphia Electric Company* (Fulton Generating Station, Units 1 and 2), ALAB-657, 14 NRC 967 (1981), and *Puerto Rico Electric Power Authority* (North Coast Nuclear Plant, Unit 1), ALAB-662, 14 NRC 1125 (1981). We understand from ALAB-668 that all aspects of the withdrawal motion and proceeding are to be considered by this Board in the first instance, not just the matters over which we retained jurisdiction. *Id.* at 451. We are also told that this Board should consider first the Intervenors' demand for their litigation expenses. *Id.* at n.2. Here again we construe ALAB-668 to require us to consider all aspects of the proceeding in determining whether Intervenors are entitled to reimbursement of their litigation expenses. For the limited purpose of deciding the issues we necessarily must consider the partial initial decisions vacated in ALAB-668 and their respective underlying records.

History of the Proceeding

Duke applied for construction permits for the three Perkins units on March 29, 1974. The Perkins reactors were to be of the PWR type, Combustion Engineering System 80 models, each with net output of 1,280 megawatts electric. The station was to be located on the Yadkin River in North Carolina.

Applications for a sister plant, the three-unit Cherokee Nuclear Station, to be located in South Carolina, employing the same C.E. design, followed a roughly parallel course.

¹ Duke's April 19 motion to withdraw the application without prejudice; Intervenors' April 29 response to Applicant's motion to withdraw; Duke's May 28 reply to Intervenors' response to motion to withdraw; and NRC Staff's June 14 response to motion to withdraw application without prejudice.

The Perkins Notice of Hearing was published in July 1974 and the Intervenors Davis and Yadkin River Committee filed their late intervention petition in June 1975 which was granted by the Board in November 1975.

Following hearings the Board issued three partial initial decisions. The first partial initial decision, LBP-78-25, *supra*, concerned the health effects associated with releases of radon-222 during the uranium fuel cycle. Intervenors lost on that issue; the Board concluded that such effects were insignificant in striking the cost-benefit balance for Perkins. The second partial initial decision, LBP-78-34, *supra*, decided National Environmental Policy Act and Atomic Energy Act issues in favor of granting the application with the exception of the question of alternate sites and generic safety issues, consideration of which was deferred. The Intervenors did not prevail on any issues. *See particularly* 8 NRC at 484-96. In the third partial initial decision, LBP-80-9, *supra*, the Board decided the alternate sites question, concluding that no other site considered was obviously superior to the Perkins site. Again, the Intervenors did not prevail. Following the third partial initial decision, the Board continued to have before it generic safety issues and issues related to the accident at Three Mile Island Unit 2.

In the meantime, in January 1978, Duke had informed the Board that Perkins Units 1 and 3 would each be delayed three years, to 1988 and 1993 respectively, and Unit 2 would be delayed four years until 1991. 8 NRC at 509, n.19. Later, in July 1979, Duke informed the Board that final plans for the Perkins units had not been made and that none of them would be added to Duke's generation until at least 1989. Duke reported difficulty in raising capital, complained of regulatory uncertainties, and reported a reduction in forecasted annual peak load growth during the 1982-1994 period.² However, Duke reasserted its eventual need for the Perkins units, and requested the Board to issue the initial decision authorizing construction permits. At the same time, Duke announced delays in the operation of the Cherokee units.³

On March 10, 1981 Duke responded to an Appeal Board inquiry reporting that Perkins was at that time unscheduled but that some additional generation would be needed in the 1990s. Duke's counsel requested that the Appeal Board proceed with its scheduled oral arguments on the partial initial decision on alternate sites.⁴ The Appeal Board heard oral arguments as scheduled on April 1, 1981.

On March 12, 1981 Duke reported to NRC's Director of the Division of Licensing, in response to his questions, substantially the same information given to the Appeal Board on March 10, and stated:

Answer. In view of the delays in the Perkins schedule Duke does not consider it appropriate to expend Commission resources on the Perkins

² Letter, William L. Porter to the Board, July 2, 1979.

³ *Id.*

⁴ Letter, William L. Porter to Bishop, March 10, 1981.

application during the next two years except for resolution of the pending licensing questions. The pending licensing questions are on alternative sites and site suitability. These have been thoroughly examined by the Licensing Board and are currently before the Appeal Board. The Appeal Board should hear the arguments and make their findings without delay.⁵

This Board also became aware of reports bringing into question the future of the Perkins project and on April 28, 1981 we directed Duke to report on its plans for Perkins. On May 5 Duke responded mainly by attaching its recent reports to the Appeal Board and to the Division of Licensing.⁶

Noting Duke's response to the Director of Licensing, this Board revisited a July 10, 1979 Intervenor's motion to dismiss or stay the proceeding (renewed in October 1979) and ruled that, although we have no basis for dismissing the proceeding, the Applicant's suggestion for a two-year hiatus was reasonable. Accordingly, we suspended the proceeding on matters pending before us for two years on May 14, 1981. Then on February 3, 1982, Duke's counsel reported that its management would recommend to its board of directors that the application for Perkins be withdrawn. This report was followed by Duke's motion to withdraw on March 2.

Withdrawal With or Without Prejudice

The Intervenor's defined a withdrawal of the Perkins application with prejudice as one which ". . . would mean that Applicant could not reapply for the construction of the same or similar facilities at the [Perkins] site or similar site in question."⁷ The *Fulton* Appeal Board, in determining the potential reach of a withdrawal with prejudice, rejected out-of-hand one which would effectively eliminate the utility's nuclear option as being "well beyond the Licensing Board's jurisdiction over a particular construction permit application." 14 NRC at 973. In *Fulton* the type of reactor, an HTGR, was seen to be a moot point because of technological advances and regulatory changes. So the Appeal Board proceeded under the assumption that prejudice only with respect to the *Fulton* site would be the subject of its consideration.

In this proceeding the Intervenor's never defined their term, "same or similar facilities," nor have they ever discussed why or whether Combustion Engineering System 80 units, any PWRs, or any type of reactor or associated equipment should be the subject of their motion. Considering the nature of the Intervenor's participation in this proceeding — site-specific environmental issues, fuel cycle effects,

⁵ Letter, William L. Porter to Eisenhut, March 12, 1981.

⁶ Duke's Response to Licensing Board order relative to future plans for Perkins, May 5, 1981.

⁷ Intervenor's March 11, 1981 Response to Motion to Withdraw, at 2.

and generalized need for power — we see no relevance in the type of facility to the issues before us. Nor did Intervenor ever offer any justification for an order barring an application at a “similar site.” Therefore we limit the consideration to whether the application should be withdrawn with prejudice to Duke’s right to reapply at the Perkins site.

In *Fulton* the Appeal Board provided firm guidance to licensing boards as to the reach of their discretion to prescribe the terms of withdrawal of an application under 10 CFR 2.107(a):

On its face, this provision [Section 2.107(a)] gives the boards substantial leeway in defining the circumstances in which an application may be voluntarily withdrawn. But as in all other areas, the boards may not abuse this discretion by exercising their power in an arbitrary manner. See *LeCompte v. Mr. Chip, Inc.*, 528 F.2d 601, 604 (5th Cir. 1976); 5 Moore’s Federal Practice ¶41.05[1] at 41-58. The terms prescribed at the time of withdrawal must bear a rational relationship to the conduct and legal harm at which they are aimed. And, of course, the record must support any findings concerning the conduct and harm in question. See *LeCompte, supra* at 604, 605.

In the case at hand, the effective prohibition against PEC’s future use of the *Fulton* site for any type of nuclear reactor (see p. 973, *supra*) is a particularly harsh and punitive term imposed upon withdrawal. The conduct and harm for which dismissal with prejudice is intended to serve as the remedy, therefore, must be of comparable magnitude.

14 NRC at 974.

Federal rules clearly favor dismissals without prejudice where no other party will be harmed thereby. Fed. R. Civ. P. 41(a)(1), (2); *LeCompte, supra*, 528 F.2d, at 603. In fact, the rule favoring dismissal without prejudice is so well established that most decisions under the rule are concerned with the conditions to be imposed to obviate legal harm from a dismissal without prejudice, not with the issue of whether the dismissal should be with prejudice. See *LeCompte, supra*, at 603, and the cases and authorities cited therein. See also *Yoffe v. Keller Indus., Inc.*, 580 F.2d 126, 129-30 (5th Cir. 1978); *petition for rehearing denied*, 582 F.2d 982 (1978).

Therefore we approach the parties’ motions with the following standards in mind:

Duke is entitled to withdraw its application without prejudice unless there is legal harm to the intervenors or the public.

In this case the Board may attach reasonable conditions on a withdrawal without prejudice to protect intervenors and the public from legal harm.

But if conditions on a withdrawal without prejudice cannot avoid legal harm, dismissal with prejudice may be ordered, but only to the extent that a dismissal with prejudice is necessary to prevent the legal harm. The right to

a voluntary dismissal without prejudice is not absolute. *LeCompte, supra*, 528 F.2d, at 604.

Duke would have the option to accept either reasonable conditions on a dismissal without prejudice, or a dismissal with prejudice as to certain issues. *Yoffe, supra*, 580 F.2d, at 131, n.13; 582 F.2d, at 983.

Intervenors assert several possibilities of legal harm to their interest if the application is dismissed without prejudice or without appropriate conditions. First, the traditional concern is expressed, *i.e.*, “. . . if this case is dismissed without prejudice, the Intervenors are obviously faced with the real possibility of a second proceeding with all its attendant fees and costs.” Response at 14. That possibility — another hearing — standing alone does not justify either a dismissal with prejudice or conditions on a withdrawal without prejudice. As the Appeal Board noted in *North Coast*:

That kind of harm — the possibility of future litigation with its expenses and uncertainties — is precisely the consequence of *any* dismissal without prejudice. It does not provide a basis for departing from the usual rule that a dismissal should be without prejudice. *Jones v. SEC*, 298 U.S. 1, 19 (1936); 5 Moore’s Federal Practice ¶41.05[1] at 41-72 to 41-73 (2d ed. 1981).¹¹

¹¹ We note that the case at bar did not entail lengthy discovery, or proceed through the trial stage. It hardly got off the ground. We leave open the question whether something short of a dismissal with prejudice, such as conditioning withdrawal of an application upon payment of the opposing parties’ expenses might be within the Commission’s powers and otherwise appropriate where the expenses incurred were substantial and intervenors developed information which cast doubt upon the merits of the application.

14 NRC at 1135. *See also LeCompte, supra*, 528 F.2d at 603, citing *Holiday Queen Land Corp. v. Baker*, 489 F.2d 1031, 1032 (5th Cir. 1974).

The cited footnote in *North Coast* above, n.11, was also specifically brought to our attention by the Appeal Board in ALAB-668, the order assigning the matter to this Board for first resolution. 15 NRC at 451, n.2. As the Appeal Board noted in *Fulton*, “Ordinarily a dismissal ‘without prejudice’ signifies that no merits disposition was made; a dismissal ‘with prejudice’ suggests otherwise.” 14 NRC at 973. Moore’s Federal Practice cited in *North Coast* (Vol. 5, ¶41.05[2], at 71-75 (2d ed. 1981)) discusses many cases where a motion for unconditional voluntary dismissal without prejudice was denied or where a motion to dismiss was granted, but with prejudice. The tenor of these cases is that the litigation had moved along too far to dismiss unconditionally without prejudice because the other party had already been put to the expense of defending. Certainly where the defendant has prevailed or is about to prevail an unconditional withdrawal cannot be approved. *Id.*; *see also* 9 Wright and Miller, Federal Practice and Procedure, Civil, Section 2364 (1971).

The Intervenors have not cited nor can we find any authority where a plaintiff has been denied or has sought a without-prejudice dismissal after having prevailed

on the merits. Nor can we find any authority where a dismissal with prejudice has been imposed upon a prevailing plaintiff. We would not expect to find any such authority (except possibly where a prevailing plaintiff seeks dismissal in the face of a dependant counterclaim) because in purely adversary and private litigation there simply is no reason for the issue to arise.

This proceeding, a mandatory licensing hearing, is unusual in comparison with traditional adversary litigations. While the cases under Rule 41(a)(2) are helpful, they do not completely cover the issues involved here. Duke filed its applications for the Perkins permit in furtherance of its business and its responsibility to supply electric power in its service area. It did not seek out the Intervenors to be adversaries, nor did it sue for a judgment against them. Obviously Duke would have preferred that the Intervenors stay out of the proceeding. Moreover, Duke did not sit on its application. The record amply demonstrates that despite growing uncertainties about the future of the Perkins project, Duke was persistent in seeking a decision on the merits.⁸ Therefore, in the circumstances of a mandatory licensing proceeding, the fact that the motion for withdrawal comes after most of the hearings should not operate to bar a withdrawal without prejudice where the applicant has prevailed or where there has been a non-suit as to particular issues.

However, Intervenors argue that Duke's assertion that it has been successful on most issues is an over-simplification and ignores the facts. In that connection, Intervenors explain that the Appeal Board failed to affirm and vacated the partial initial decisions. Response at 2. We do not know quite what Intervenors would have us make of the Appeal Board's action. The worst effect it would have on Duke's position is that the motion to withdraw would be in the face of a non-suit. Under traditional standards, that is exactly when withdrawal without prejudice is justified.⁹

On the other hand we do not accept the argument implicit in Duke's pleadings that, because Intervenors voluntarily chose to participate in this proceeding to protect their own interests, and because an NRC licensing proceeding cannot be used to harrass intervenors, Intervenors have no standing to seek a dismissal with prejudice. Duke's Reply at 13. The same kind of argument is made by Duke (Reply at 28-29) and by the NRC Staff (Response at 21) with respect to Intervenors' standing to request litigation expenses as a condition of withdrawal. First, Intervenors are not completely volunteers. They did not elect to have their interests affected by the Perkins application. Second, in any event, their standing to be

⁸ Duke's diligence, in fact, is the major complaint Intervenors have against Duke, and their citation to *Cherry v. Brown-Frazier-Whitney*, 528 F.2d 965 (D.C. Cir. 1976) (dismissal with prejudice after failure to prosecute), is inapposite.

⁹ We do not need to address the situation of an unwilling litigant who has gone to the expense and effort to prepare for trial and is entitled to conditions on withdrawal or a dismissal with prejudice even though the matter was not heard on the merits. 5 Moore's Federal Practice ¶41.05 at 41 and n. 19 (2d ed. 1981). Intervenors make no claim on that basis. All matters scheduled to be heard before this Board were heard.

admitted as a party to the proceeding is a statutory right under Section 189a of the Atomic Energy Act. Part and parcel of their right to intervene is the right to enjoy any earned benefits of the ensuing proceeding. Otherwise the entire intervention process would be pointless. In our view the Intervenor has standing to seek a dismissal with prejudice or to seek conditions on a dismissal without prejudice to the exact extent that they may be exposed to legal harm by a dismissal. If the Intervenor has won anything in this proceeding they are entitled to have that judgment preserved for use in any revived Perkins proceeding or to be protected from harm if any victory is nullified by the unfair need to litigate their interests again.

The Intervenor claims that they achieved success in this proceeding with respect to the amount of cooling water to be withdrawn from the Yadkin River:

When the Applicant first proposed the Perkins Plant in the year 1974, it proposed to withdraw up to fifty percent of the Yadkin River flow down to a minimum flow of 330 cubic feet per second and an impoundment of 4,550 acre feet. After the evidence and arguments of the Intervenor, the Applicant's proposal was reduced to twenty-five percent of the river flow, and a larger makeup reservoir of 39,800 acre feet was required and net withdrawal could not go below a minimum of 1,000 cubic feet per second. The original minimum figure had been 330 cubic feet per second and the State of North Carolina had agreed to 880 cubic feet per second. Therefore, it is obvious that Intervenor had a great impact on the water questions.

Intervenor Response at 5-6.

Intervenor's Contention III(A)1 asserted that the proposed drawdown limitation of 880 cfs combined with other factors would have an adverse effect on High Rock Lake. 8 NRC 484. The Board found that the contention as a whole failed and that Perkins' use of Yadkin River water would have a negligible impact on the lake. *Id.* at 487. Moreover the Board went on to find:

67. . . . [North Carolina] State Exhibit 2 is a copy of Environmental Management Commission (EMC) corrected Resolution No. 76-41. In that document EMC found that the effects of Duke's withdrawal on downstream users will be minimized if the net withdrawal is limited to no more than 25% of stream flow and is prohibited when stream flow is 1,000 cfs or less. The maximum consumptive withdrawal is not to exceed 112 cfs.

These conditions were made a part of the certificate from the NCUC. 8 NRC at 489.

We accepted the State's conditions as conditions on any construction permit. *Id.* at 490. Thus it was the State of North Carolina, not the Intervenor, who succeeded in establishing the minimum withdrawal limitation from the Yadkin River. We make this determination from a review of the partial initial decision. Intervenor has not pointed to any evidentiary basis for its claim, nor have we made a separate search of the record on its behalf.

Let us assume for argument, however, that the Intervenor had an influence in attaining that 1,000 cfs minimum stream flow limitation, and in that sense “. . . developed information which cast doubt upon the merits of the application.” *North Coast*, ALAB-662, 14 NRC 1135, n.11, cited *supra*. The most it could hope for would be a dismissal with prejudice with respect to the water condition imposed by the Board or, perhaps as we discuss below, compensation for expenses in anticipation of the need to litigate the condition again. We would not impose such a condition, however, without further inquiry. Intervenor has not provided sufficient information to require “reasonable minds to inquire further” on the issue. *North Coast*, *supra*, 14 NRC at 1134. We see no need, *sua sponte*, in the public interest to inquire further now, because, *inter alia*, of the continuing interest and responsibility of the State of North Carolina on water issues in any renewed Perkins application. It is better to leave any condition for minimum stream flow open to conform to any changed future conditions on the Yadkin River. Moreover, it is as likely as not that in any renewed Perkins application, the minimum permissible stream flow might be increased, a risk that Duke accepts in withdrawing without prejudice. We conclude that neither Intervenor nor the public will suffer legal harm by a dismissal without prejudice on water issues.

Intervenor also argue that they aided the Board and Duke on the issue of need for power and, in effect, Intervenor should have prevailed on that issue. Response at 2-5. A dismissal of the Perkins application with total prejudice on the issue of need for power, a request implicit in Intervenor’s motion, would make no sense at all. It would deprive the utility of its nuclear option contrary to statute, and would be contrary to the public interest when and if the need arises for a facility such as Perkins in the future. And, as the *Fulton* Appeal Board noted, *supra*, that action would be beyond our jurisdiction.

Even if Intervenor had prevailed on the merits of the need-for-power issue during the hearings, the most it could have achieved is a *res judicata* determination that, during the hearings in 1977, Duke failed to establish that Perkins would be required in Duke’s system roughly during the times then scheduled. Given the inherent uncertainty in predicting long-term power needs, as recognized in NRC decisions, it is unlikely in the extreme that the Board would have decided that the proposed Perkins facility would never be needed.¹⁰ In fact, even the terms of Intervenor’s Contention III(E) on need for power asserted only that Perkins “. . . would not be needed at the time the facility is scheduled to come on line. . . .”

¹⁰ In *Carolina Power and Light Company* (Shearon Harris Nuclear Power Plant, Units 1, 2, 3, and 4), CLI-79-5, 9 NRC 607, 609 (1979), the Commission commented: “The general rule applicable to cases involving differences or changes in demand forecasts was stated in *Niagara Mohawk Power Corporation* (Nine Mile Point Nuclear Station, Unit 2), ALAB-264, 1 NRC 347, 352-69 (1975). In that case the Appeal Board found the question was ‘not whether Niagara Mohawk will need additional generating capacity but when.’ *Id.* at 357.”

Perhaps, however, Intervenor's intend to assert only that they are entitled to their litigation expenses as a result of their participation on the need-for-power issues, a consideration which we address below.

Litigation Expenses

Intervenor's argument that they are entitled to attorney's fees from Duke as an award to the prevailing party is very weak. The Supreme Court in *Alyeska Pipeline Serv. v. Wilderness Soc.*, 421 U.S. 240; 44 L.Ed.2d 141; 95 S.Ct. 1612 (1975), clearly reconfirmed that, under the American rule, ordinarily parties are to bear their own litigation expense. A claim for litigation costs under the "private attorney general" theory must have a statutory basis. *Id.*, 421 U.S. 269. The *Alyeska* ruling was extended to administrative agencies in *Turner v. FCC*, 514 F.2d 1354 (D.C. Cir. 1975). Intervenor's acknowledge the *Alyeska* decision, but argue that there is a statutory basis for authorizing attorney's fees here because the Commission, by rule (10 CFR Part 170), under statute has provided for assessing licensing costs against applicants. We cannot see any similarity between Commission's regulation providing for license fees and a statute authorizing attorney's fees in furtherance of a public policy to encourage the private enforcement of Federal statutes, e.g., treble damages and reasonable attorney's fees in antitrust suits under Section 4 of the Clayton Act, 15 U.S.C. Sec. 15.

On the other hand we have not been persuaded by the arguments of the NRC Staff (Response at 19-21) and Duke (Reply at 25-27) that the Commission's boards lack any authority whatever to award attorney fees for the purpose of obviating legal harm threatened by a withdrawal without prejudice.

Many cases under Rule 41 have involved the payment of attorney's fees to save defendants from legal harm where actions have been dismissed without prejudice. As the court in *LeCompte* noted:

Most cases under the Rule [41(a)(2)] have involved conditions that require payment of costs and attorney's fees. See, e.g., *American Cyanamid Co. v. McGhee*, 317 F.2d 295 (5th Cir. 1963); see also 5 Moore's Federal Practice ¶41.06, at 1081-1083 (2d ed. 1975); Annot., 21 A.L.R.2d 627, 633-637 (1952), and cases cited therein.

528 F.2d, at 603.

The courts have freely used the payment of attorney's expenses as the most useful of the conditions available to protect a defendant in recognition that the plaintiff may reinstate his action after the defendant has been put to effort and expense in the first proceeding for naught. *Id.*

The American rule, which bars recovery of litigation costs by the prevailing party as an award for winning a presumably completed law suit, must be distinguished from the practice of reimbursing litigation costs as a condition on a dismissal without prejudice. The latter is not an award for winning anything, but is

intended as compensation to defendants who have been put to trouble and expense to prepare a defense only to have the plaintiff change his mind, withdraw the complaint, but remain free to bring the action again. It is only anticipation that the defendant may have to incur expenses to prepare again in a refiled proceeding which justifies the payment of defendants' costs in the first proceeding as a condition of dismissal without prejudice. 5 Moore's Federal Practice, *supra*, ¶41.06, at 41-83, 41-86.

Both Staff and Duke recognize that boards may apply appropriate conditions on the withdrawal of an application for construction permit, but each argues that a condition requiring reimbursement of attorney's fees may not attach because boards lack statutory authority or any inherent equity authority for such a condition. Their arguments fail of their own weight. Where is the express authority to attach any kind of condition — redress of a site for example? Is there something about money that takes reimbursement of litigation expenses out of the bank of possible conditions available to avoid legal harm to an adversary? Staff argues only that the Federal Rules do not *necessarily* apply to Commission proceedings. Response at 29. Applicant lightly brushes aside the well-established use of attorney's fees in without-prejudice dismissals by courts to protect litigants from harm. Reply at 26. Both allow the clear prohibition against lawyer's fees under the American rule to wander out of its limitations into their considerations of conditions on dismissals without prejudice — two essentially unrelated concepts.

There is nothing about the payment of money which removes a possible litigation-expense condition from consideration, because, in the final analysis, the utility does not have to pay. It can instead elect to accept a reasonable without-prejudice ruling as to issues where, for example, the intervenor prevailed and where the public interest permits.

The absence of specific statutory authority does not prevent boards from exercising reasonable authority necessary to carry out its responsibilities and a money condition is not necessarily barred from consideration. For example, under 10 CFR 2.720(f) a presiding officer may condition the denial of a motion to quash or to modify a subpoena *duces tecum* on "just and reasonable terms." In *Pacific Gas and Electric Company* (Stanislaus Nuclear Project, Unit 1), ALAB-550, 9 NRC 683 (1979), the Appeal Board ruled that even without express statutory authority, an agency has the right to condition the enforcement of subpoenas upon the payment of production costs. *Id.* at 698-702.

It is true that the Appeal Board in ALAB-550, in broad language, held that ". . . a manifest difference exists between (1) awarding attorney's fees in favor of one litigant against another and (2) requiring a party who requests the issuance of a subpoena *duces tecum* to assume the costs of compliance with it." *Id.* at 700. However, the cited discussion was to make the necessary distinction between the American rule and the authority of the agency to impose reasonable terms of conditions on litigants in furtherance of the agency's mission.

We hold that the payment of attorney's fees is not necessarily prohibited, as a matter of law, as a condition of withdrawal without prejudice of a construction permit application.¹¹

This ruling, however, turns out to be a hollow victory for Intervenor because the record does not reveal that they will suffer any legal harm from an unconditioned dismissal of the Perkins applications without prejudice. We arrive at this conclusion quite easily on the issues of alternate sites, fuel cycle health effects, effects on the Yadkin River, and site-specific environmental and safety issues. As we noted above, Intervenor lost on these issues. The worst that can befall Intervenor if the Perkins application is withdrawn without prejudice is that they will have an unearned second chance to prevail on these issues.

We do not so easily arrive at a conclusion on the need-for-power issue however. The issue presents several handles for possible analysis. Intervenor lost on the issue but feel that they should have prevailed in view of later developments. What is the consequence of that possibility? Should we make an evidentiary inquiry into the correctness of our need-for-power decision? Were Intervenor correct about need for power but for the wrong reasons? Should we inquire as to whether negative price elasticity, advances in alternate energy sources, conservation, and peak pricing reduced the need for Perkins, as contended by Intervenor in 1977? Even if we did inquire, could we separate the unanticipated high costs of financing utility expansion and the economic recession as contributors to Perkins' demise? These factors were not identified by Intervenor in 1977.

We decide the matter against Intervenor on two bases. The first is that in 1977 when the matter was heard, Intervenor did not prevail on the issue. Nor can we find from the ensuing events that they should have prevailed. While that theoretical possibility exists, Intervenor have not made the requisite showing sufficient to require reasonable minds to inquire further nor do they request a further inquiry. Based upon the record presented to us in 1977, we determined that the preponderance of the reliable, probative and substantial evidence established that in 1977 the Perkins units would be required on Applicant's schedule. 8 NRC 492-96. If the Perkins application is refiled, Intervenor will have an opportunity to test again the need-for-power issue, providing that issue remains the subject of individual Commission adjudications.

The second basis for ruling against Intervenor is similar to the reason we declined to dismiss with prejudice on the need-for-power issue. *Supra*, at 16. Even assuming that the Intervenor prevailed or should have prevailed on the merits of the need-for-power issue, because of the uncertainties in power need projections and the overriding public interest, the Intervenor could have achieved a *res*

¹¹ *Northern Indiana Public Service Company* (Bailly Generating Station, Nuclear 1), LBP-82-29, 15 NRC 762 (1982), cited by Staff and Duke, can be distinguished because, *inter alia*, the Licensing Board there held that the effect of the termination, with or without prejudice, is to rescind the construction permit with finality. *Id.* at 767.

judicata ruling only as to future power needs as reasonably predicted from the situation prevailing in the relevant period surrounding 1977. *Kansas Gas and Electric Company and Kansas City Power and Light Company* (Wolf Creek Generating Station, Unit 1), ALAB-462, 7 NRC 320, 328 (1978). They would not have won (nor did they seek) a *res judicata* determination that the power from Perkins would never be needed. Therefore Intervenor could not have been assured even in victory that they would not have to face the issue again after a reasonable period of time.

The result we reach produces an anomalous legal phenomenon because the matter arises after hearing and decision on the merits. Assuming *arguendo* that Duke's withdrawal proves that Intervenor prevailed on the need-for-power issue in that, as they contended, Perkins is not needed on the schedule set by Duke. In that case Intervenor would not be entitled to attorney's fees because, as the prevailing party, they received what they paid for and are barred from recovery under the American rule. This would also hold true if the Perkins facility is never needed and the application never refiled. But assuming, as we find to be the case, that Intervenor lost on the need-for-power issue, then also they may not recover their attorney's fees because they will suffer no legal harm on any filing of a new Perkins application. Either way, under the circumstances of this unusual issue, Intervenor may not collect their litigation costs.¹²

Intervenor also mount a claim for relief on the grounds that the Perkins application should have been withdrawn in 1980 and that, as a consequence, Intervenor were required to carry out an appeal in 1981. Response at 9-12. The Appeal Boards in *Fulton* and in *North Coast* recognized the relevance of the utilities' good or bad faith in revealing its intentions not to pursue a construction permit application. *Fulton*, 14 NRC at 974-79; *North Coast*, 14 NRC at 1136-37. But the asserted bad faith is relevant only to possible harm caused by the bad faith to the other party or to the public. *Fulton*, at 978-79.

We see no bad faith in the timing of Duke's withdrawal. This Board requested and received status information satisfactory to us in May 1981, and we denied Intervenor's motion to dismiss the application then. Apparently the Appeal Board was also satisfied with Duke's report to it in March 1981 because it heard oral arguments in April. In any event, even assuming bad faith, the only resulting legal harm to it asserted by Intervenor is their need to prepare for and present their appeal and this effort is referred to only in passing. Response at 12.

The final grounds for relief asserted by Intervenor is that they have benefited Duke. First they claim (incorrectly) to have first brought to Duke's attention the

¹² Wright and Miller, *supra*, at 18-19, recognizes the anomalous situation where a plaintiff would not have been liable for defendant's attorney's fees if the plaintiff had lost on the merits, but can be required to pay them on a withdrawal without prejudice. See also *Lunn v. United Aircraft Corp.*, 26 F.R.D. 12, 18 (D.C. Del. 1960).

usefulness of a staff economist. Response at 2-3. Second, they assert that, but for their intervention, Duke would have been exposed to hundreds of millions of dollars in unrecoverable expenditures because Perkins would have been partially constructed at this point. *Id.* at 13. As to the latter claim, we are fascinated with the Intervenor's innovative use of jurisprudential *chutzpah*, particularly in light of Duke's complaint that regulatory uncertainties contributed to Perkins' demise. But any claim Intervenor has for their volunteered beneficence to Duke must rest upon a private cause of action. It is beyond our jurisdiction.

The NRC Staff has advised the Board that it is aware of no reason why the Perkins application should not be dismissed. No Limited Work Authorization (LWA) has been issued and no site preparation activities have occurred; thus no site redress action is required. Letter, Sherwin Turk to Board, June 14, 1982.

Therefore it is the order of this Board that:

The motion of Duke Power Company to withdraw without prejudice the application for construction permits for the Perkins Nuclear Station is *granted*.

The request of Intervenor Davis, *et al.*, to dismiss the application with prejudice and for attorney's fees and costs is *denied*.

The proceeding pending before this Board, relating to generic and TMI-related safety issues, is *terminated as moot*.

This order is appealable. Any party may take an appeal to the Appeal Board by filing exceptions within ten days after service. A brief in support of the exceptions shall be filed within thirty days thereafter or within forty days in the case of the Staff.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Ivan W. Smith, Chairman
ADMINISTRATIVE LAW JUDGE

Bethesda, Maryland
September 20, 1982

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Lawrence Brenner, Chairman
Dr. James H. Carpenter
Dr. Peter A. Morris**

In the Matter of

**Docket No. 50-322-OL
(Emergency Planning)**

**LONG ISLAND LIGHTING COMPANY
(Shoreham Nuclear Power Station,
Unit 1)**

September 22, 1982

The Licensing Board rules on claims of attorney-client, work product and executive privileges asserted by a governmental intervenor in opposition to two discovery requests from applicant for the production of certain emergency planning documents.

RULES OF PRACTICE: DISCOVERY; PRODUCTION OF DOCUMENTS

Pursuant to 10 CFR §2.741(d), the party upon whom a request for the production of documents is served must serve upon the requesting party, within 30 days after service of the request, a response stating either that the requested inspection and copying will be permitted, or stating reasons why the requested discovery is objectionable. Pursuant to 10 CFR §2.740(f)(1), an evasive or incomplete answer or response shall be treated as a failure to answer or respond.

RULES OF PRACTICE: DISCOVERY; OBJECTIONS

A party opposing a discovery request need not seek a protective order, pursuant to 10 CFR §2.740(c), so long as he does respond to the request by objecting. In ruling upon a motion to compel made in accordance with §2.740(f), however, a board is empowered to make such a protective order as it would make upon a motion made pursuant to §2.740(c). A party objecting to the production of a document on grounds of privilege therefore has the obligation to specify in its response to a document request those same matters which it would be required to set forth in attempting to establish "good cause" for the issuance of a protective order.

RULES OF PRACTICE: DISCOVERY; PROTECTIVE ORDER

What constitutes "good cause" for the issuance of a protective order depends upon the kind of protective order being sought. In order to show good cause for the issuance of a protective order, pursuant to 10 CFR §2.740(c), to avoid the disclosure of documents for which an evidentiary privilege is claimed, a party must specifically designate and describe (1) the documents claimed to be privileged, (2) the privilege being asserted and (3) the precise reasons why the party believes the privilege to apply to such documents.

RULES OF PRACTICE: DISCOVERY; ASSERTION OF PRIVILEGE

A party asserting certain documents to be privileged from discovery must bear the burden of proving that it is entitled to such protection, *see In re Fischel*, 557 F.2d 209 (9th Cir. 1977), and this includes pleading such claims adequately in its response. Claims of privilege must be specifically asserted with respect to particular documents, and may not be raised by blanket objection that all matters which could fit a particular document request are privileged. *See United States v. El Paso Company*, No. 81-2484 (5th Cir. August 13, 1982); *United States v. Davis*, 636 F.2d 1028, 1044, n.20 (5th Cir. 1981). This is because discovery privileges are not absolute, and may or may not apply to a particular document, depending upon a variety of circumstances.

RULES OF PRACTICE: DISCOVERY; ASSERTION OF PRIVILEGE

It is not sufficient for a party asserting certain documents to be privileged from discovery to await a motion to compel from the party seeking discovery prior to

setting forth its assertions of privilege and identifying those matters which it claims to be privileged. Such a practice places an unfair burden upon the party seeking discovery and occasions unnecessary delays. Claims of privilege are untimely unless asserted in the response to the discovery request.

RULES OF PRACTICE: DISCOVERY; PRIVILEGES

Pursuant to 10 CFR §2.740(b)(1), parties may generally obtain discovery “regarding any matter, not privileged, which is relevant to the subject matter in the proceeding. . . .” While the only discovery privilege codified in the NRC regulations is the work production doctrine, the Commission decision to model §2.740(b) after Rule 26(b) of the Federal Rules of Civil Procedure implicitly adopted those privileges which have been recognized by Federal Courts interpreting Rule 26(b).

RULES OF PRACTICE: DISCOVERY

While the Federal Rules of Civil Procedure are not themselves directly applicable to practice before the Commission, judicial interpretation of a Federal Rule can serve as guidance for the interpretation of a similar or analogous NRC discovery rule. *Toledo Edison Company, et al.* (Davis-Besse Nuclear Power Station), ALAB-300, 2 NRC 752, 760 (1975); *Cincinnati Gas & Electric Company, et al.* (Wm. H. Zimmer Nuclear Power Station, Unit 1), LBP-82-47, 15 NRC 1538, 1542 (1982).

RULES OF PRACTICE: DISCOVERY; ATTORNEY-CLIENT PRIVILEGE

The purpose of the attorney-client privilege is to encourage full and frank communication between attorneys and their clients and thereby promote broader public interests in the observance of law and administration of justice. *Upjohn Co. v. United States*, 449 U.S. 383, 389 (1981). An attorney’s involvement in, or recommendation of a transaction does not place a cloak of secrecy around all incidents of such a transaction. *In re Fischel*, 557 F.2d 209, 212 (9th Cir. 1977). The attorney-client privilege does not protect disclosure of the underlying facts communicated to the attorney. *Upjohn*, 449 U.S. at 395. A communication from the attorney to the client should be privileged only if the client had a reasonable expectation in the confidentiality of the statement, if it was necessary to obtain informed legal advice and might not have been made absent the privilege. *Ohio-Sealy Mattress Manufacturing Company v. Kaplan*, 9 F.R.D. 21, 28 (N.D. Ill. 1980).

**RULES OF PRACTICE: DISCOVERY; ATTORNEY-CLIENT
PRIVILEGE**

The fact that a document is authored by in-house counsel, rather than by an independent attorney, is not relevant to a determination of whether such a document is privileged. In such cases, however, the privilege protects only communications revealing confidences of the client or seeking legal advice, not matters relating solely to the conduct of the client's business. *O'Brien v. Board of Education of City School District of City of New York*, 86 F.R.D. 548, 549 (S.D.N.Y. 1980); *In re Fischel*, 557 F.2d 209, 211 (9th Cir. 1977).

**RULES OF PRACTICE: DISCOVERY; WORK PRODUCT
DOCTRINE**

To be privileged from discovery by the work product doctrine, as codified in 10 CFR §2.740(b)(2), a document must be both prepared by an attorney, or by a person working at the direction of an attorney, and prepared in anticipation of litigation. "Ordinary work product," which does not include the mental impressions, conclusions, legal theories or opinions of the attorney or his agents, may be obtained by an adverse party upon a showing of "substantial need of the materials in preparation of his case and that he is unable without undue hardship to obtain the substantial equivalent of the materials by other means." 10 CFR §2.740(b)(2). Opinion work product is not discoverable, so long as the material was in fact prepared by an attorney or his agent in anticipation of litigation, and not assembled in the ordinary course of business, or pursuant to public requirements unrelated to litigation. *In re Murphy*, 560 F.2d 326, 334-336 (8th Cir. 1977).

RULES OF PRACTICE: DISCOVERY; EXECUTIVE PRIVILEGE

Cases decided under Exemption 5 of the Freedom of Information Act, which relates to inter-agency or intra-agency letters or memoranda, may be looked to for guidance in resolving claims of executive privilege in NRC proceedings related to discovery. While the discovery rules for claims of executive privilege "can only be applied under Exemption 5 by way of rough analogies," *EPA v. Mink*, 410 U.S. 73, 86 (1973), the similarities between these matters are sufficient such that Exemption 5 cases may be used as guidance, taking a common sense approach which recognizes any differing equities presented in FOIA cases. *See Mink*, 410 U.S. at 91. FOIA cases, for example, do not consider a party's need for requested documents. *NLRB v. Sears*, 421 U.S. 132, 149 n.16 (1975). NRC FOIA cases do consider the public interest of such disclosures, however. *See Consumers Power*

Company (Palisades Nuclear Power Facility), ALJ-80-1, 12 NRC 117, 122-126 (1980) and cases cited therein.

RULES OF PRACTICE: DISCOVERY; EXECUTIVE PRIVILEGE

A governmental intervenor does not waive its claims of executive privilege by its participation as a litigant in an NRC proceeding. *Consumers Power Company* (Palisades Nuclear Power Facility), ALJ-80-1, 12 NRC 117, 127-128 (1980).

RULES OF PRACTICE: DISCOVERY; EXECUTIVE PRIVILEGE

The privilege against disclosure of intragovernment documents containing advisory opinions, recommendations and deliberations is a part of the broader executive privilege. Its purpose is to encourage frank discussions within the government regarding the formulation of policy and the making of decisions. Documents shielded by executive privilege remain privileged even after the decision to which they pertain has been effected, since such disclosure at any time could inhibit the free flow of advice. *Federal Open Market Committee of the Federal Reserve System v. Merrill*, 443 U.S. 340, 360, (1979).

RULES OF PRACTICE: DISCOVERY; EXECUTIVE PRIVILEGE

The executive privilege is a qualified privilege, and does not attach to purely factual communications, or to severable factual portions of communications, the disclosure of which would not compromise military or state secrets. Furthermore, even communications which fall within the protection of the privilege may be disclosed upon an appropriate showing of need. An objective balancing test is used to determine a party's need for such documents, weighing the importance of the documents to the party seeking their production, and the availability elsewhere of the information contained in the documents, against the government interest in secrecy. *United States v. Leggett & Platt, Inc.*, 542 F.2d 655, 658-659 (6th Cir. 1976), *cert. denied*, 430 U.S. 945 (1977).

MEMORANDUM AND ORDER
RULING ON LILCO'S MOTION TO COMPEL DISCOVERY OF
SUFFOLK COUNTY EMERGENCY PLANNING DOCUMENTS

I. BACKGROUND

On August 23, 1982, the Applicant, Long Island Lighting Company (LILCO), moved this Board, pursuant to 10 CFR §2.740(f), for an order compelling intervenor Suffolk County (County) to produce those documents sought in "LILCO's First Request to Suffolk County for Production of Emergency Planning Documents," dated June 2, 1982, and in "LILCO's Second Request to Suffolk County for Production of Emergency Planning Documents," dated June 22, 1982. This motion asserts that the County has failed to produce in a timely fashion all documents requested by LILCO and that the County has neither identified those documents which it alleges to be privileged from discovery nor the dimensions of the privileges which are being claimed.

Annexed to LILCO's motion was certain correspondence between LILCO and the County, including an August 11, 1982 letter in which the County had listed 44 items which it asserted to be privileged from disclosure by virtue of either the attorney-client privilege, the work product doctrine, the intra-agency communications branch of the executive privilege, or by virtue of some combination of these privileges.

Two days later, on August 25, 1982, LILCO filed a supplement to its August 23 motion to compel. Attached to the LILCO supplement was an August 24, 1982 letter from counsel for the County, listing an additional 18 documents which the County stated it was withholding under claims of privilege. LILCO's supplemental motion sought to compel the production of these documents for the same reasons stated in its August 23 motion.

As a result of discussions between counsel for LILCO and the County held pursuant to the Board's directions, the parties resolved their disputes with regard to 28 of the 62 documents listed in Suffolk County's August 11 and 24 letters. The County filed a response to LILCO's motion to compel on August 31, 1982, objecting to producing the remaining documents on the grounds of the privileges previously alleged. The response also asserted that LILCO's objections to the timeliness of the County's production of documents in response to LILCO's requests were without merit and "essentially moot," in view of the County's imminent completion of its production of documents for which privileges were not

claimed. Copies of the 34 documents which the County asserts to be privileged were provided for the Board's *in camera* inspection with this response.¹

By letter dated September 2, 1982, the County transmitted to LILCO the last of those emergency planning documents which it believes to be responsive to LILCO's requests. This letter lists 13 additional documents which the County claims to be privileged from discovery. The letter suggests, however, that LILCO await the Board's anticipated rulings on those items previously withheld, prior to contesting these claims of privilege, noting that the County would be prepared to reconsider its positions based upon the Board's rulings on those matters.

Copies of those additional documents for which privilege was claimed in the County's September 2, 1982 letter were provided for the Board's *in camera* inspection on September 8, 1982. Thereafter, on September 10, 1982, the County provided the Board with a consolidated *in camera* submission of all 46 emergency planning documents which it is claiming to be privileged from disclosure in response to LILCO's document requests.² The documents in this submission were color-coded to show which privileges the County is claiming for various portions of each document.

On September 13, 1982, as permitted by the Board, LILCO filed its Reply to Suffolk County's August 31 answer to the LILCO motion to compel (as supplemented). This last filing by LILCO replies to those claims of privilege for the 34 documents asserted in the County's August 31 response, but does not address those additional 12 documents withheld by the County's September 2 letter.

¹ In a conference call held on September 3, 1982, the Board requested that the County review once again the documents submitted *in camera* on August 31 and determine whether it wished to continue to pursue its claim of privilege with respect to all of these items. The Board noted that disclosure of certain of these items, such as transmittal letters, would appear to be of lesser significance than would the disclosure of other items, and asked whether the public interest might not be better served if the County's claims of privilege were more narrowly focused.

In a letter to the Board dated September 7, 1982, the County acknowledged that the content of certain of the documents which it is claiming to be privileged may not be so significant as that of others, but stated that it continues to believe the privileges asserted for each document to be supportable. It asserts that the significance of these documents is irrelevant to their discoverability and states that "Suffolk County considers the principles underlying the privileges it has asserted to be important to effective litigation and effective decision making." It also states, incorrectly, that the Board suggested in the September 3 conference call that the County might have in some way waived its privileges by participating in the Shoreham licensing proceeding and denies that there is any basis for finding such a waiver based on its participation.

² One item claimed in the County's September 2, 1982 letter to be privileged, and which was included in its September 8, 1982 *in camera* submission to the Board, was deleted from this group of documents after discussions held with LILCO pursuant to this Board's directions during a September 7, 1982 conference call. Also deleted from those items which had been included in the County's September 8 *in camera* submission were two documents not appearing on the County's lists of documents being withheld. Their presence was brought to the County's attention by a September 9 telephone call from Counsel for the Licensing Board, Daniel F. Brown. The County's September 10 letter to the Board described these documents as relating to security matters and stated that they were inadvertently included in this submission. We agree with the County that these documents are not responsive to LILCO's emergency planning requests.

II. SUFFOLK COUNTY'S RESPONSE AND THE TIMELINESS OF THE COUNTY'S PRODUCTION OF DOCUMENTS

The two LILCO requests to the County for the production of emergency planning documents, which are the subject of the instant motion, each state that they are being made pursuant to 10 CFR §2.741. Subsection (d) of this regulation provides:

(d) *Response.* The party upon whom the request is served shall serve on the party submitting the request a written response within thirty (30) days after the service of the request. The response shall state, with respect to each item or category, that inspection and related activities will be permitted as requested, unless the request is objected to, in which case the reasons for objection shall be stated. If objection is made to part of an item or category, the part shall be specified.

Suffolk County's response to LILCO's June 2, 1982 document request was served on July 1, 1982, and its response to LILCO's June 22, 1982 request was served on August 4, 1982.

LILCO states, at page 2, n.1 of its August 23 motion, that the County's second response was filed out of time (a fact acknowledged by the County in that document). Furthermore, LILCO's motion asserts, at 4-5, that the County has not produced documents within the dates specified by the Board at its July 20, 1982 prehearing conference as a result of LILCO's July 9, 1982 motion to compel, has not provided adequate detail as to those documents which it claims to be privileged from discovery, and has not applied for a protective order pursuant to 10 CFR §2.740(f).

In its August 31 Response, the County states that it informed LILCO in late July that due to the dimensions of LILCO's requests, the County could not produce all documents by early August and asserts that ". . . LILCO refused to narrow its requests to facilitate more prompt production." Response at 2. The County disputes LILCO's allegation that it has provided no basis for its assertions of privilege, stating that specific descriptions of those documents claimed to be privileged and the nature(s) of any privilege(s) being asserted were provided in its August 11 and 24 letters. Response at 4-5. It further states that under 10 CFR §2.740(f), a party is not required to seek a protective order when, as in the case of the County, the party responds to a discovery request. Response at 4. It also alleges that, pursuant to 10 CFR §2.740(f)(1), LILCO's motion to compel is itself untimely. Response at 3. The County does not address the timeliness of its own objections. We address each of these matters below.

A. Responses, Objections, and Applications for Protective Orders

As noted above, pursuant to 10 CFR §2.741(d), a party upon whom a request for the production of documents is served is required to serve, within 30 days, a written response stating either that the requested inspection will be permitted or stating its reasons for objecting to the request. We agree with LILCO that the County's August 4, 1982 response to LILCO's June 22 document request was not timely filed; however, in the interest of ruling on the important privileges asserted, we will not deny the County's objections due to their untimeliness in the circumstances of this particular instance.

LILCO's August 23 motion to compel asserts, at 4-5, that the County has not properly raised its claims of privilege in response to LILCO's requests in that the County has not moved for a protective order pursuant to 10 CFR §2.740(c). In support of its claim, LILCO cites 10 CFR §2.740(f)(1), which states, in pertinent part:

Failure to answer or respond shall not be excused on the ground that the discovery sought is objectionable unless the person or party failing to answer or respond has applied for a protective order pursuant to paragraph (c) of this section.

The County states, in our view, correctly, that a party is not required to seek a protective order when it has, in fact, responded by objecting. Pursuant to 10 CFR §2.740(f)(2), we are empowered to make such a protective order as we would make upon a motion made pursuant to section 2.740(c), in ruling upon a motion to compel made in accordance with section 2.740(f). We believe, however, that in embracing this idea, the County has encountered a double-edged sword.

The sentence immediately preceding the above-quoted language of section 2.740(f)(1), referring to "failure to answer or respond," states that "[f]or purposes of this paragraph, an evasive or incomplete answer or response shall be treated as a failure to answer or respond." We believe the County's July 1 and August 4 responses to LILCO's document requests to be, at the very least, incomplete.

Section 2.741(d) requires that a response state, with respect to each item or category, either that inspection will be permitted or that the request is objectionable for specific reasons. In addition to certain other objections which we overruled at the July 20 prehearing conference and in our July 27 order, at 23-24, the County's July 1 response to LILCO's June 2 request objects to producing documents responsive to eight categories of items sought, alleging that they seek privileged matters pertaining to Suffolk County policymaking. This response does not in any way describe those documents claimed to be privileged from production, nor does it attempt to assert that any other privilege applies to those documents sought by LILCO. Similarly, the County's August 4 response to LILCO's June 22 request does not attempt to claim that any privilege applies to the matters sought by LILCO.

We believe Suffolk County's responses to be incomplete as a basis for the claims of privilege which the County now attempts to assert. While we agree with the County that it was under no obligation to move formalistically for a protective order with respect to those documents which it now claims to be privileged, a party objecting to the production of documents on grounds of privilege *does* have the obligation to specify in its response to a document request those same matters which it would be required to set forth in attempting to establish "good cause" for the issuance of a protective order, *i.e.*, there must be a specific designation and description of (1) the documents claimed to be privileged, (2) the privilege being asserted and (3) the precise reasons why the party believes the privilege to apply to such documents.³

It will not suffice for a party to object that all matters which could fit a particular category in a document request are privileged, as the County did in raising its claims of executive privilege in its July 1 response. Claims of privilege must be specifically asserted with respect to particular documents. *See United States v. El Paso Company*, No. 81-2484 (5th Cir. August 13, 1982); *United States v. Davis*, 636 F.2d 1028, 1044, n.20 (5th Cir. 1981). As is discussed, *infra*, privileges are not absolute and may or may not apply to a particular document, depending upon a variety of circumstances.⁴ The claimant of a privilege must bear the burden of proving that it is entitled to such protection, (*see In re Fischel*, 557 F.2d 209 (9th Cir. 1977)), and this includes pleading it adequately in its response.

Nor is it sufficient for a party asserting certain documents to be privileged from discovery to await a motion to compel from the party seeking discovery prior to setting forth its assertions of privilege and specifying those matters which it claims to be privileged.⁵ Such a practice both wrongfully places an unnecessary burden on

³ We recognize that the standards for showing "good cause" for a protective order enumerated above differ from those adopted by the Appeal Board in *Kansas Gas and Electric Co., et al.* (Wolf Creek Nuclear Generating Station, Unit 1), ALAB-327, 3 NRC 408, 416-417 (1976). In the context of an application for a protective order to prevent the disclosure of certain commercial information, pursuant to 10 CFR §2.740(c)(6), that case required that it be demonstrated that (1) the information in question is of a type customarily held in confidence by its originator; (2) there is a rational basis for having customarily held it in confidence; (3) it has, in fact, been kept in confidence; and (4) it is not found in public sources. *Id.*

However, what constitutes "good cause" for the issuance of a protective order depends upon the kind of protective order that is being sought. *See* 4 J. Moore's Federal Practice ¶26.68 (2d ed. 1982). We believe the standards enumerated above more accurately reflect the showing necessary to establish "good cause" for issuance of a protective order in the context of an assertion of evidentiary privilege.

⁴ While privileges exist to provide categorical protection to certain individual interests which society has an interest in protecting at the expense of the public interest and the search for truth, the existence of a privilege must be determined on a fact-specific basis. *Cf. In re Sealed Case*, 676 F.2d 793, at 806-807, n.43 and accompanying text (D.C. Cir. 1982) (addressing privileges in the context of a grand jury subpoena).

⁵ While we recognize that Suffolk County did eventually list those documents for which it claims privilege in letters to LILCO dated August 11, August 24 and September 2, these letters are untimely as responses to LILCO's document requests. Only the August 11 and 24 letters, which were attached to LILCO's August 23 motion and its August 25 supplement, have been formally served and docketed in the record of this proceeding.

the party seeking discovery to obtain that which is its right under the Commission's discovery rules and occasions unnecessary delays in the production of these items.⁶ This is well illustrated here, where the properly detailed objections in the County's August 31 answer to the motion to compel should have been made about two months and one month earlier, at the times at which the responses to LILCO's June 2 and June 22 document requests were due. Indeed, had there been particular claims of privilege in response to LILCO's June 2 request, they would have been ruled on in connection with LILCO's July 9 motion to compel at our July 20 prehearing conference.

While we therefore conclude that it would be within our power to deny the County's claims of privilege outright as being both improperly and untimely raised, we do not believe this to be the appropriate course of action or in the public interest based on the record before us and the dearth of previous Commission precedent interpreting the applicable NRC discovery rules.⁷ We therefore address the County's claims of privilege, *infra*.

B. Timeliness of Suffolk County's Production of Documents and LILCO's Motion to Compel

In our July 27, 1982 order, which confirmed the rulings made at our July 20 prehearing conference, we directed:

Suffolk County shall produce those documents requested by LILCO which are in its direct custody and control by July 26, 1982. Those requested documents in the possession of consultants, witnesses, etc., should be produced by August 3, 1982. Tr. 7416-7417. The County is expected to make good faith efforts to produce such documents in a timely fashion and should promptly communicate to LILCO any difficulties which might arise in meeting this schedule such that a mutually agreeable resolution might be reached. (Order at 25.)

While Suffolk County began producing documents on July 26, it did not complete its document production until September 2, 1982, almost one full month after the date by which we had ordered the County to comply with LILCO's requests. It did not until its August 11, August 24 and September 2, 1982 letters identify to LILCO those specific documents which it was withholding under

⁶ Cf. *Cincinnati Gas and Electric Company, et al.* (Wm. H. Zimmer Nuclear Power Station, Unit 1), LBP-82-47, 15 NRC 1538, 1545-46 (1982) (holding that a party objecting to a deposition question may not simply instruct his witness not to answer a question, but must either seek a ruling from the licensing board or move for a protective order).

⁷ Cf. *Consumers Power Company* (Midland Plant, Units 1 and 2), ALAB-691, 16 NRC 897 (1982) (holding censure of counsel inappropriate when advancing justifiable legal theory).

"[F]uture litigants who make only blanket assertions of privilege . . . should not expect such grace." *United States v. Davis*, 636 F.2d, at 1044, n.20.

claims of privilege, even though it had asserted such privileges as early as its July 1 response to LILCO's first document request. Nor did the County, to this Board's knowledge, set a date certain for the completion of its document production until it filed its August 31, 1982 response to LILCO's August 23 motion to compel. Response at 2.

In our opinion, the County has failed to comply with our order requiring that it make good faith efforts to produce documents pursuant to LILCO's requests in a timely fashion *or* that it *promptly communicate* to LILCO any difficulties encountered such that a *mutually agreeable* resolution might be reached. Suffolk County's August 31 response asserts that the County was at that time continuing to produce documents "as speedily as it is able to do so," but does not attribute its one-month delay to anything other than the size of the LILCO requests and LILCO's refusal to narrow their scope.

In view of our July 27, 1982 prehearing conference order directing that the County produce those emergency planning documents requested by LILCO (Order at 25), we find no basis for the County to claim that LILCO was under any obligation to limit the scope of its document requests solely to decrease the time period within which the County could respond. Indeed, we held in that order that in light of the efforts made by all parties, particularly LILCO, to comply in a timely fashion with previous voluminous discovery requests, "the Board does not believe that a request for documents should be deemed objectionable solely because there might be some burden attendant to its production." Order at 24.

We further note, as LILCO points out in its August 23 motion, at 3, that a major consideration behind the Board's ordering the County to produce those documents responsive to LILCO's requests within the time frames described at the July 20 prehearing conference, Tr. 7416-7417, and confirmed in our July 27 order, at 25, was to ensure that LILCO would have these documents prior to the commencement of depositions on August 5, 1982. Tr. 7414-7415. We recognized that in view of the dimensions of LILCO's document requests it was possible that certain logistical problems might arise in their production. In fact, the County noted at the July 20 prehearing conference the possibility that certain of its consultants might have some difficulty producing their materials in a timely fashion. Tr. 7413-7415. It was for these reasons that we directed the County to "promptly communicate to LILCO" any such difficulties, "such that a mutually agreeable resolution might be reached." July 27 order at 25.

Other than complaining about the breadth of LILCO's requests, it does not appear from the record before us that the County made good faith efforts to communicate its difficulties to LILCO, or to work out any sort of mutually agreeable resolution. Indeed, the County's failure to produce documents in a timely fashion appears particularly egregious when it is noted that although the County produced all responsive documents in the possession of its consultants, who are located as far away as California, by August 16, what the County

describes as "only a small number of documents from the County Executive's office," Response at 2, n.1, were not produced until September 2, 1981. Even if we assume, based solely on the described location of these documents, that these matters presented certain closer questions of privilege than had other items at other locations, the County offers no explanation why it should have taken 17 more days, in addition to the almost four weeks from our prehearing conference until August 16, for it to review this admittedly small number of documents. We therefore conclude that the County has failed to produce documents in a timely fashion, in unilateral violation of the due dates which were particularly discussed and established by the Board.⁸

In light of the County's failure to produce documents in accordance with this Board's order, its untimely response to LILCO's second document request, as well as its untimely assertions of privilege with respect to particular items, we do not look with great favor on its objection to the timeliness of LILCO's motion to compel. Indeed, in view of the continuing nature of the County's failure to comply with time requirements, it does not appear that LILCO's motion is untimely. In any event, we believe that fundamental fairness requires that we consider LILCO's motion.

Furthermore, so as to avoid further delay in resolving this discovery dispute, we believe it appropriate to rule at this time on all of the County's claims of privilege. Tr. 10,278-10,279. Even though LILCO's September 13 reply does not address those matters described as privileged in the County's September 2 letter, we are unaware of any agreement by LILCO to defer consideration of these matters, as proposed by that letter. We therefore read LILCO's August 23 motion to compel to include these items, which the County admits to be responsive to LILCO's document requests.

III. DISCOVERY PRIVILEGES UNDER NRC REGULATIONS⁹

Pursuant to 10 CFR §2.740(b)(1), parties may generally obtain discovery "regarding any matter, not privileged, which is relevant to the subject matter in the proceeding. . . ." With exception of the work product doctrine, which is codified

⁸ In the absence of agreement among the parties or a request for extension to the Board, the County, represented by experienced counsel, cannot march to the beat of its own drum. This is particularly true in the circumstances of this complex and lengthy proceeding. Since we are now in the evidentiary hearing phase on many issues, an unexpected change in the scheduling for one item often has cascading repercussions for the scheduling of many other items. We trust this is the last lecture which we need deliver to any party in the proceeding on the importance of adhering to required time periods, in the absence of the grant of a timely request for an extension.

⁹ In the discussions of relevant case law which follow, no citations are provided to the pagination of the Federal case law slip opinions which are cited. Research of these matters was performed using the LEXIS (TM) legal research computer system, which, regrettably, does not provide this information.

as section 2.740(b)(2), those matters which are privileged from discovery are not expressly set out as a part of the NRC Rules of Practice.

We note, however, that section 2.740(b) is adopted from Rule 26(b) of the Federal Rules of Civil Procedure,¹⁰ the provisions of which are substantially the same as the Commission's rule. While the Federal Rules of Civil Procedure are not themselves directly applicable to practice before the Commission,¹¹ judicial interpretations of a Federal Rule can serve as guidance for the interpretation of a similar or analogous NRC discovery rule.¹² We thus believe that by choosing to model section 2.740(b) after Federal Rule 26(b), without incorporating any specific limitation, the Commission implicitly chose to adopt those privileges which have been recognized by the Federal Courts. Therefore, we address below each of the privileges claimed by the County.

A. Attorney-Client Privilege

"The attorney-client privilege is the oldest of the privileges for confidential communications known to the common law." *Upjohn Co. v. United States*, 449 U.S. 383, 389 (1981), citing 8 J. Wigmore, Evidence §2290 (McNaughten rev. 1961). Its purpose is to "encourage full and frank communication between attorneys and their clients and thereby promote broader public interests in the observance of law and administration of justice." *Upjohn, supra*; see also *Fisher v. United States*, 425 U.S. 391, 403 (1976).

The two formulations of the essential elements of this privilege most frequently cited are those which are found in 8 J. Wigmore, Evidence §2992, at 554 (McNaughten rev. 1961)¹³ and in *United States v. United Shoe Machinery Corporation*, 89 F.Supp. 357, 358-359 (D. Mass. 1950).¹⁴ The Wigmore formulation of this privilege has been read to presuppose that communications for which the privilege is claimed will emanate directly from the client. See, e.g., *Ohio-Sealy Mattress Manufacturing Company v. Kaplan*, 90 F.R.D. 21, 28 (N.D. Ill. 1980);

¹⁰ See Statement of Considerations, 37 *Fed. Reg.* 15,127 (July 28, 1972).

¹¹ See *Toledo Edison Company, et al.* (Davis-Besse Nuclear Power Station), ALAB-300, 2 NRC 752, 760 (1975).

¹² *Id.*; see also *Cincinnati Gas & Electric Company, et al.* (Wm. H. Zimmer Nuclear Power Station, Unit 1), LBP-82-47, 15 NRC 1538, 1542 (1982).

¹³ "(1) Where legal advice of any kind is sought (2) from a professional legal advisor in his capacity as such (3) the communications relating to that purpose (4) made in confidence (5) by the client (6) are at his instance permanently protected (7) from disclosure by himself or by the legal advisor (8) except the protection be waived (footnote omitted)."

¹⁴ "The privilege applies only if (1) the asserted holder of the privilege is or sought to become a client; (2) the person to whom the communication was made (a) is a member of the bar of a court, or his subordinate and (b) in connection with this communication is acting as a lawyer; (3) the communication relates to a fact of which the attorney was informed (a) by his client (b) without the presence of strangers (c) for the purpose of securing primarily either (i) an opinion on law or (ii) legal services or (iii) assistance in some legal proceeding, and not (d) for the purpose of committing a crime or tort; and (4) the privilege has been (a) claimed and (b) not waived by the client."

see also *In re Fischel*, 557 F.2d 209, 211 (9th Cir. 1977); *United Shoe Machinery Corporation*, 89 F.Supp., at 358-359. Although there appears to be division among state courts as to whether communications from an attorney to his client, as opposed to the reverse, are protected by this privilege, the Federal courts have generally held that communications in both directions are covered. See *United States v. Ramirez*, 608 F.2d 1261, 1268 n.12 (9th Cir. 1979) and cases therein cited.

Apparently premised, at least in part, on the assumption that any statement by a lawyer is likely to reveal, at least indirectly, a confidential communication by a client, one line of cases holds that once the attorney-client privilege is established, virtually all communications from a client are subject to the privilege, even if unsolicited. See e.g., *Burlington Industries v. Exxon Corp.*, 65 F.R.D. 26, 37 (D. Md. 1974); *Jack Winter, Inc. v. Koratron Company, Inc.*, 54 F.R.D. 44, 46 (N.D. Cal. 1971). The more widely held view, and in our opinion, the correct one, is that statements from an attorney to the client are privileged only if the statements reveal, either directly or indirectly, the substance of a confidential communication by the client. See *Fischel*, 557 F.2d at 211-212; *Ohio-Sealy Mattress*, 90 F.R.D., at 28. This interpretation of the privilege comports with the above-stated purpose of the privilege to protect and thereby encourage a client's full disclosure of relevant facts to an attorney, without concealing everything said and done in connection with an attorney's legal representation of a client in a matter. "An attorney's involvement in, or recommendation of, a transaction does not place a cloak of secrecy around all incidents of such a transaction." *Fischel*, 557 F.2d, at 212.

Furthermore, while the privilege ensures that a client cannot be compelled to disclose communications with his attorney, it does not protect disclosure of the underlying facts communicated to the attorney; put another way, "[t]he attorney-client privilege does not protect against discovery of underlying facts from their source, merely because those facts have been communicated to an attorney." *United States v. El Paso Company*, No. 81-2484 (9th Cir. August 13, 1982), citing *Upjohn*, 449 U.S., at 395.

Additionally, while the fact that a document is authored by in-house counsel, rather than by an independent attorney is not relevant to a determination of whether such a document is privileged, *O'Brien v. Board of Education of City School District of City of New York*, 86 F.R.D. 548, 549 (S.D.N.Y. 1980), the attorney-client privilege is only available as to communications revealing confidences of the client or seeking legal advice. *Id.*; *SCM Corp. v. Xerox Corp.*, 70 F.R.D. 508 (D. Conn.), *interlocutory appeal dismissed*, 534 F.2d 1031 (2d Cir. 1976). "The purpose of the privilege is to protect and foster the client's freedom of expression. It is not to permit an attorney to conduct his client's business affairs in secret." *Fischel*, 557 F.2d, at 211; see generally *Fisher v. United States*, 425 U.S. 391,

403-405 (1976); *Sedco International v. Cory*, Nos. 81-2007; 81-2056 (8th Cir. August 2, 1982).

As was stated in *Ohio-Sealy Mattress*, 90 F.R.D., at 28, “communications from the attorney to the client should be privileged only if it is shown that the client had a reasonable expectation in the confidentiality of the statement; or, put another way, if the statement reflects a client communication that was necessary to obtain informed legal advice [and] which might not have been made absent the privilege.” Citing *In re Walsh*, 623 F.2d. 489, 494 (7th Cir.), cert. denied sub nom. *Walsh v. United States*, 449 U.S. 994 (1980).

B. Work Product Doctrine

The NRC’s discovery rules regarding the work product doctrine are set out in 10 CFR §2.740(b)(2), which provides:

(2) *Trial preparation materials.* A party may obtain discovery of documents and tangible things otherwise discoverable under paragraph (b)(1) of this section and prepared in anticipation of or for the hearing by or for another party’s representative (including his attorney, consultant, surety, indemnitor, insurer, or agent) only upon a showing that the party seeking discovery has substantial need of the materials in the preparation of this case and that he is unable without undue hardship to obtain the substantial equivalent of the materials by other means. In ordering discovery of such materials when the required showing has been made, the presiding officer shall protect against disclosure of the mental impressions, conclusions, opinions, or legal theories of an attorney or other representative of a party concerning the proceeding.

These rules are adapted from Rule 26(b)(3) of the Federal Rules of Civil Procedure, *Commonwealth Edison Company* (Zion Station, Units 1 and 2), ALAB-196, 7 AEC 457, 460 (1974), which is itself a derivation of the Supreme Court’s decision in *Hickman v. Taylor*, 329 U.S. 495 (1947). See Advisory Comm. Note to 1970 Amendments to Fed. R. Civ. Proc., 48 F.R.D. 459, 499 (1970).

As the Supreme Court observed in *Hickman*, 329 U.S., at 508, the work product doctrine is distinct from and broader than the attorney-client privilege. The Court further explained this doctrine in *United States v. Nobles*, 422 U.S. 225, 238-239 (1975), wherein it stated:

At its core, the work product doctrine shelters the mental processes of the attorney, providing a privileged area within which he can analyze and prepare his client’s case. But the doctrine is an intensely practical one, grounded in the realities of litigation in our adversary system. One of those realities is that attorneys often must rely on the assistance of investigators and other agents in the compilation of materials in preparation for trial. It is therefore necessary that the doctrine protect material prepared by agents

for the attorney as well as those prepared by the attorney himself (footnote omitted).

While we agree with LILCO that this is a qualified privilege, *see Nobles*, 422 U.S., at 237-238, we believe its formulation of the questions which must be addressed in applying this doctrine under 10 CFR §2.740(b)(2), September 13 Reply, at 8, fails to adequately consider whether materials for which this privilege is claimed reflect an attorney's mental impressions and opinions. *See Upjohn Co. v. United States*, 449 U.S. 383, 397-398 (1981).

In *In re Murphy*, 560 F.2d 326 (8th Cir. 1977), the U.S. Court of Appeals for the Eighth Circuit clarified the qualified work product doctrine privilege afforded to materials prepared in anticipation of litigation by Rule 26(b)(3) of the Federal Rules of Civil Procedure under *Hickman* and its progeny. The court stated:

The rule establishes a qualified immunity for ordinary work product — that which does not contain the mental impressions, conclusions or opinions of the attorney. Such work product is discoverable only upon a showing of substantial need and an inability to secure the substantial equivalent of the items through alternate means without undue hardship. 560 F.2d, at 334.

The *Murphy* court was careful to distinguish the protection to be afforded to so-called "ordinary work product" from that which Rule 26(b)(3) provides for "an attorney's opinion work product." While noting that some courts have allowed discovery of such matters simply upon a showing of "sufficient good cause," 560 F.2d, at 336, *citing United States v. Brown*, 478 F.2d 1038, 1041 (7th Cir. 1973), the *Murphy* court concluded that in light of the Supreme Court's holding, in *Hickman v. Taylor*, 329 U.S. at 511, an attorney's thoughts to be inviolate,

[i]t is clear that opinion work product is entitled to substantially greater protection than ordinary work product. Therefore, unlike ordinary work product, opinion work product can not (sic) be discovered upon a showing of substantial need and an inability to secure the substantial equivalent of the materials by alternate means without undue hardship. *See Fed. R. Civ. P. 26(b)(3)*. In our view, opinion work product enjoys a nearly absolute immunity and can be discovered only in very rare and extraordinary circumstances. *See Hickman v. Taylor, supra*. Our unwillingness to recognize an absolute immunity for opinion work product stems from the concern that there may be rare situations, yet unencountered by this court, where weighty considerations of public policy and a proper administration of justice would militate against the non-discovery of an attorney's mental impressions. Absent such a compelling showing, the attorney's opinion work product should remain immune from discovery. 560 F.2d, at 336 (footnotes omitted).

The *Murphy* court was careful to note, however, that its ruling does not shield opinion work product materials from judicial scrutiny in the form of *in camera* inspection. 560 F.2d, at 336, n.20.

A recent opinion of the U.S. Court of Appeals for the Fifth Circuit qualifies the application of the work product doctrine privilege for attorney's opinion work product for in-house counsel. In *United States v. El Paso Company*, No. 81-2484 (5th Cir. August 13, 1982), a case in which the appellant had raised the attorney-client and work product privileges in opposition to a subpoena of the U.S. Internal Revenue Service, the court stated:

The work product doctrine is not an umbrella that shades all materials prepared by a lawyer, however. The work product doctrine focuses only on materials assembled and brought into being in anticipation of litigation. Excluded from work product materials, as the advisory committee notes to Rule 26(b)(3) make clear, are "[m]aterials assembled in the ordinary course of business, or pursuant to public requirements unrelated to litigation. . . ." 48 F.R.D., at 501.

In reaching its holding that a tax pool analysis prepared by in-house counsel should not be afforded work product protection, the *El Paso* court found that a determination of whether work product protection should be afforded to documents prepared by in-house counsel should focus on whether these documents were called into being by virtue of business imperatives, or the press of litigation, and concluded the former to be the case.

Additionally, the Fifth Circuit noted that *El Paso's* tax litigation was being handled by outside counsel and that even though an attorney from *El Paso's* tax department served as co-counsel, outside counsel took the lead in directing the conduct of *El Paso's* tax suits. Relying on *United States v. Gates*, 35 F.R.D. 524 (D. Colo. 1964) (IRS documentary files on the taxpayer were not work product when referred to U.S. Justice Department Attorneys who were prosecuting the case) and *Able Investment Co. v. United States*, 53 F.R.D. 485 (D. Neb. 1971) (denying work product protection to documents prepared by the IRS which impartially evaluated the strengths and weaknesses of the IRS's and the taxpayer's positions), as well as other cases, and comparing *Kent Corp. v. NLRB*, 530 F.2d 612 (5th Cir.), *cert. denied*, 429 U.S. 920 (1976) (investigation reports of the NLRB prepared after a charge has been filed are the NLRB attorney's work product as prepared in contemplation of litigation), the *El Paso* court concluded that documents prepared by in-house counsel should be afforded work product protection only if prepared in contemplation of litigation.¹⁵

¹⁵ "Prudent parties anticipate litigation, and begin preparation prior to the time suit is formally commenced. Thus the test should be whether, in light of the nature of the document and the factual situation in the particular case, the document can fairly be said to have been prepared or obtained because of the prospect of litigation." Wright & Miller, *Federal Practice and Procedure*: Civil §2024, at 198 (1970) (footnote omitted).

(Continued)

We therefore conclude that to be privileged from discovery by the work product doctrine, as codified in 10 CFR §2.740(b)(2), a document must be both prepared by an attorney, or by a person working at the direction of an attorney, and prepared in anticipation of litigation. Ordinary work product, which does not include the mental impressions, conclusions, legal theories or opinions of the attorney (or other agent), may be obtained by an adverse party upon a showing of "substantial need of the materials in preparation of this case and that he is unable without undue hardship to obtain the substantial equivalent of the materials by other means." 10 CFR §2.740(b)(2). Opinion work product is not discoverable, so long as the material was in fact prepared by an attorney or other agent in anticipation of litigation, and not assembled in the ordinary course of business, or pursuant to public requirements unrelated to litigation.

In applying the guidance above to our rulings which follow, we note that the County's radiological response plan, although required to be provided to the NRC by the applicant prior to the issuance of a full-power license, see 10 CFR §§50.33(g) and 50.47 (as amended by the Commission on July 13, 1982, 47 Fed. Reg. 30,233), is being prepared by the County pursuant to the laws of the State of New York. See N.Y. Executive Law §§20, et seq. (McKinney). While we recognize that any plan which is eventually produced by Suffolk County may be the subject of contentions during Phase II of our emergency planning proceedings, we believe that materials relating solely to the preparation of Suffolk County's own plan are not items prepared in anticipation of litigation, but materials assembled in the ordinary course of business and pursuant to public requirements which would exist independent of this litigation.

C. The Executive Privilege for Intragovernmental Communications

At the outset of this discussion, we note that we do not agree with LILCO's argument that no common law executive or governmental privilege exists under the NRC regulations. We, like LILCO, have found no NRC case either recognizing or refusing to recognize this privilege outside of the context of Exemption 5 of the Freedom of Information Act or discovery against either the Staff or the Advisory Committee on Reactor Safeguards (ACRS) pursuant to 10 CFR §§2.744 and 2.790 (which provide for a qualified privilege for such materials). LILCO does not assert, however, that the same public policies which led to the judicial adoption of an executive privilege do not exist in NRC proceedings, such that this Board should not recognize this privilege.

See also *Able Investment Co.*, supra, 53 F.R.D. at 49 (documents prepared routinely by a government attorney who did not try the case and before litigation commenced not privileged. "The documents in all probability do not fix the government's theory of the case to be used at trial, because trial counsel should and undoubtedly would set the defense from all available facts and theories whether or not conceived or expressed by personnel at the various stages of the settlement process. . . .")

We believe that the Commission's adoption of the substance of Rule 26(b) of the Federal Rules of Civil Procedure in enacting 10 CFR §2.740(b) requires that we recognize those same privileges which the Federal Courts have recognized under that Federal Rule of Civil Procedure in interpreting section 2.740(b). See *Toledo Edison Company, et al.* (Davis-Besse Nuclear Power Station), ALAB-300, 2 NRC 752, 760 (1975).

Additionally, we reject LILCO's claim, (September 13 Reply, at 9), that those cases cited to us by Suffolk County involving Exemption 5 of the Freedom of Information Act (FOIA) are inapplicable here as precedent. Exemption 5 provides a statutory exemption from disclosure by those agencies covered by the FOIA for "inter-agency or intra-agency memorandums (sic) or letters which would not be available by law to a party other than an agency in litigation with the agency." 5 U.S.C. §552(b)(5). In *EPA v. Mink*, 410 U.S. 73, 86 (1973), the Supreme Court held that the discovery rules for claims of executive privilege "can only be applied under Exemption 5 by way of rough analogies." Commission precedent, which has dealt with this question to date only in the context of discovery and FOIA requests directed to the Staff or to the Advisory Committee on Reactor Safeguards (ACRS), has expressly adopted *Mink* and has relied upon both Exemption 5 and civil discovery precedent in its rulings. *Virginia Electric and Power Company* (North Anna Power Station, Units 1 and 2), CLI-74-18, 7 AEC 313 (1974); *Consumers Power Company* (Palisades Nuclear Power Facility), ALJ-80-1, 12 NRC 117, 121 (1980).

The Supreme Court expressed the opinion in *Mink* that certain inherent differences exist between discovery in civil litigation and disclosure under the FOIA which might militate a different balancing of the equities of disclosure under these two processes. 410 U.S., at 86-87 and n.34. Among those equities to be considered in civil discovery cases which are not considered in FOIA cases are the requesting party's need for the documents in the context of the particular case, or the nature of the case itself. See *NLRB v. Sears*, 421 U.S. 132, 149, n.16(1975).¹⁶

The Supreme Court also stated in *Mink*, however, that "Exemption 5 contemplates that the public's access to internal memoranda will be governed by the same flexible common-sense approach that has long governed private parties' discovery of such documents in litigation with Government agencies." 410 U.S., at 91. Based on this guidance, we conclude it to be appropriate to look to cases decided under Exemption 5 of the FOIA for guidance in resolving claims of executive privilege in NRC proceedings related to discovery, so long as this is

¹⁶ Cf. *Consumers Power Company, supra*, 12 NRC at 122-126, concluding that, while based on *Sears*, the need of a litigant seeking discovery against the Staff pursuant to the FOIA and its exemptions in 10 CFR §2.790 need not be considered, as such, previous Commission decisions had permitted disclosure of material otherwise protected from disclosure by the executive privilege, where such disclosures were found to be in the public interest. Compare *Virginia Electric and Power Company* (North Anna Power Station, Units 1 and 2), CLI-74-17, 7 AEC 313 (1974) (permitting disclosure) with *Consumers Power Company* (Midland Plant, Units No. 1 & 2) ALAB-33, 4 AEC 701 (1971) (denying disclosure).

done using a common-sense approach which recognizes any differing equities presented in such FOIA cases. This has been the practice in Federal case law. *See, e.g., Smith v. FTC*, 403 F.Supp. 1000, 1015, n.45 (D. Del. 1975).

We also reject LILCO's argument that the County has waived its claims of executive privilege by its participation as a litigant in this proceeding. The cases cited to us by LILCO as authority do not stand for this proposition. Indeed, there is NRC precedent to the contrary. *See Consumers Power Company* (Palisades Nuclear Power Facility), ALJ-80-1 (Smith, J.), 12 NRC 117, 127-128 (1980), which distinguishes three Federal cases which come much closer to the mark than those cited to us by LILCO. We do not believe that a waiver of the executive privilege occurs solely by virtue of a government becoming a litigant, for we believe this would render the existence of such a privilege to be purely illusory.

The privilege against disclosure of intragovernment documents containing advisory opinions, recommendations and deliberations is a part of the broader executive privilege recognized by the courts. *See, e.g., United States v. Nixon*, 418 U.S. 683, 705-711 (1974). The purpose behind the privilege is to encourage frank discussions within the government regarding the formulation of policy and the making of decisions. *United States v. Berrigan*, 482 F.2d 171, 181 (3rd Cir. 1973). This is because "[h]uman experience teaches that those who expect public dissemination of their remarks may well temper candor with a concern for appearances . . . to the detriment of the decision-making process." *Nixon*, 418 U.S., at 705 (footnote omitted). Furthermore, "documents shielded by executive privilege remain privileged even after the decision to which they pertain may have been effected, since disclosure at any time could inhibit the free flow of advice, including analysis, reports, and expression of opinion within the agency." *Federal Open Market Committee of the Federal Reserve System v. Merrill*, 443 U.S. 340, 360 (1979).¹⁷

The executive privilege is a qualified privilege, and does not attach to purely factual communications, or to severable factual portions of communications, the disclosure of which would not compromise military or state secrets. *EPA v. Mink*, 410 U.S., at 87-88; *Smith, supra*, 403 F.Supp., at 1015. Furthermore, even communications which fall within the protection of the privilege may be disclosed upon an appropriate showing of need. *United States v. Leggett & Platt, Inc.*, 542 F.2d 655, 658-659 (6th Cir. 1976) *cert. denied*, 430 U.S. 945 (1977). *See also Smith*, 403 F.Supp., at 1015-1016. In determining the need of a litigant seeking the production of documents covered by the executive privilege, an objective balancing test is employed, weighing the importance of the documents to the party

¹⁷ The Supreme Court held that a different result would obtain under Exemption 5 of the FOIA for information which the government has generated in the process of awarding a contract because the Government's rationale for protecting such information expires as soon as the contract is awarded or the offer withdrawn. *Id.*

seeking their production and the availability elsewhere of the information contained in the documents against the government interest in secrecy. *Legget & Platt, supra*, 542 F.2d, at 658-659.

“[T]he burden is upon the claimant of the executive privilege to demonstrate a proper entitlement to exemption from disclosure,” *Smith*, 403 F.Supp., at 1016, including a demonstration of “precise and certain reasons for preserving” the confidentiality of the governmental communication. *Id.*, citing *Black v. Sheraton Corp.*, 371 F. Supp. 97 (D.D.C. 1974).

IV. RULINGS ON DISCOVERABILITY OF DOCUMENTS FOR WHICH PRIVILEGES ARE CLAIMED

We apply the above legal guidance in making the following rulings on the County’s claims of privilege. Specific legal citations are omitted where they would be redundant to those set forth in the preceding pages. Documents are discussed *seriatim* in the order in which they appear in the County’s August 11, August 24 and September 2, 1982 letters. The Roman group numbers assigned by the County have been retained. Individual documents have been numbered within each group for clarity of identification. The description quoted is the County’s as it appears in its letters.

Group I (Attorney-Client and Executive Privileges Claimed)

1. A letter from Patricia A. Dempsey, Assistant County Attorney, to Robert C. Meunkel, dated February 3, 1982, regarding use of school buses and school building in case an evacuation is required.
2. A letter from Robert C. Meunkel to Patricia Dempsey dated February 24, 1982, regarding school district participation during a radiological emergency.
3. A letter from Robert C. Meunkel to Patricia A. Dempsey, dated April 30, 1981, regarding legal documents necessary to guarantee availability of facilities, equipment and services required for an evacuation plan.
4. A letter from Richard A. Strang, Deputy Commissioner, Department of Transportation, to Patricia Dempsey, dated August 20, 1980, regarding time estimates for evacuation.

Item 1.1 is a request by an in-house county attorney for information from the County Planning Director to aid her in responding to a letter from a third party who had requested certain information. This request does not appear to relate in any way to legal advice sought by the client, legal services or assistance in some legal proceeding. Accordingly, we conclude that the attorney-client privilege does not apply to this document.

Additionally, this document does not appear in any way to reveal intragovernmental deliberations, such that its disclosure would inhibit internal deliberative processes. We therefore find that the executive privilege does not apply to this document and order that it be produced.

Item 1.2 is a letter from the County Planning Director to an in-house County attorney, apparently responding to *Item 1.1*. It too seeks no legal advice, legal services or assistance in any legal proceeding. Furthermore, as it provides factual information to counsel for disclosure to a third party outside the County government, it cannot be said this information was intended to remain confidential between attorney and client. The attorney-client privilege therefore does not apply.

This document does contain information describing certain factual matters which are to be contained in the County's predecisional plan. We believe the information to be wholly factual. However, even if we assume these matters not to be entirely factual, and thus protected by executive privilege, in balancing the County's need for secrecy against LILCO's need for this information, we believe the intended disclosure of this information to a third-party outside the County government waives any claim which the County might make as to the need that this information be kept secret. We therefore order that this document be produced.

Item 1.3 is a letter from the County Planning Director to an in-house County attorney seeking legal advice as to legal agreements necessary for its evacuation plan. As such, it is privileged from production under the attorney-client privilege. We reject LILCO's assertion that factual material contained in this document should be disclosed; while the facts contained in this letter may or may not be disclosable in other contexts, they are privileged in this attorney-client communication.

Item 1.4 is a letter from the County Deputy Commissioner of Transportation to an in-house County attorney, which appears to be both responding to an inquiry regarding compliance with certain NRC requirements for time estimates and transmitting certain correspondence. The referenced attachments are not included in the County's *in camera* submission and have apparently been disclosed as no longer being confidential. As a communication between attorney and client regarding compliance with legal requirements, we find this document to be privileged from disclosure, even though the facts which it contains should have already been disclosed. If these facts (summarized in the second paragraph of the letter) have not been disclosed, the County is directed to do so. LILCO has a substantial need for this information, to be able to coordinate its plans for emergencies with the County's.

Group II (Work Product Privilege Claimed)

1. PRC Voorhees' notes on LILCO's emergency plan.
2. Memorandum to Dr. Edward P. Radford from Chris McMurray, Counsel to Suffolk County, dated May 25, 1982, regarding Dr. Radford's review of the LILCO plan.
3. Comments on the Shoreham Nuclear Power Station emergency plan authored by Dr. James Johnson.
4. A letter from Dr. Kai T. Erikson to Christopher M. McMurray, dated May 13, 1982, regarding Dr. Erikson's review of the LILCO plan.
5. A letter from Christopher M. McMurray, Counsel to Suffolk County, to Dr. Kai Erikson, dated May 3, 1982, regarding a review of LILCO's plan.
6. A letter from Christopher M. McMurray, Counsel to Suffolk County, to James H. Johnson, Jr., dated April 21, 1982, regarding a review of the LILCO plan.
7. A letter to Herbert Brown, Counsel to Suffolk County, from James H. Johnson, dated July 26, 1982, regarding a review of Suffolk County's plan.

Item II.1 is a document which the County states in its Response, at 10, to have been prepared by a Consultant to assist the County's attorneys in formulating contentions. We believe this document, therefore, to be ordinary work product.

The County also asserts that LILCO cannot demonstrate the need to obtain this document since the consultant who authored it (apparently Mr. Kanen of PRC Voorhees) was made available for deposition where his views regarding the LILCO Plan could be examined. LILCO observes in its Reply, at 15, however, that Mr. Kanen stated at his deposition that he could not "recall the very issues" upon which he commented for the County, Kanen Deposition Tr. 129, and asserts that its inability to obtain this information from Mr. Kanen establishes its need for this information.

We believe LILCO has established its need for this information, which is admitted by the County to be relevant to its contentions. LILCO has been unsuccessful in its attempt to get this information by deposition, and we believe that it would cause LILCO undue hardship to require that LILCO seek this information by other means, such as interrogatories, at this late date. Therefore, we order that Item II.1 be disclosed.

Item II.2 is a memorandum from a County attorney actively engaged in its emergency planning litigation to a consultant. It clearly is non-disclosable attorney opinion work product and need not be produced.

Item II.3 is a document containing the technical comments of a County Consultant on the LILCO plan, together with a transmittal letter to Counsel for the County. Like Item II.1, if this is work product at all, it is ordinary work product

and may be disclosed upon a showing of substantial need. It appears that these technical comments are also pertinent to the requirement, independent of this litigation, that the County prepare a plan and coordinate it with the LILCO plan. Accordingly, it is arguable the document is not work product prepared for litigation.

LILCO states in its Reply, at 15, that it was unable to question Dr. Johnson at his deposition about this critique, because counsel for the County asserted these matters to be privileged under the work product doctrine. *See* Johnson Deposition Tr. 140, 145-146.

We agree that the counsel for the County improperly precluded further inquiry into this matter with his objections. The purpose of discovery is to allow a party to learn about its opposition's case, and the work product doctrine may not be expanded so as to require a party to await litigation before learning the technical opinions of its opposition's experts. Additionally, LILCO requires this information to ensure that its plan is properly coordinated with the County's. Therefore, for the reasons stated above with respect to Item II.1, we order that Item II.3 be disclosed.

Item II.4 consists of a letter from a consultant to a County attorney containing technical comments on the LILCO plan. Like Item II.3, if this is work product at all, it is ordinary work product.

LILCO asserts that it needs this item because at his deposition, the consultant stated that he was unable to be specific about his opinions on the LILCO plan since he did not have certain necessary material with him at the time. Erikson Deposition Tr. 112.

We order that Item II.4 be produced for the reasons stated above with respect to Item II.3.

Item II.5 is a letter from Counsel for Suffolk County to two consultants, regarding their review of the LILCO plan and enclosing what the letter describes as "an outline of the County's concerns." We believe the facts recited in this letter to be intermingled with litigation preparation strategy and therefore to be protected attorney opinion work product. While the enclosures to this letter were not provided to the Board for *in camera* inspection, these also would appear to be attorney opinion work product. Accordingly, this item need not be disclosed.

Item II.6 is also a letter from Counsel for Suffolk County to a consultant discussing the LILCO plan in the context of litigation strategy. As such, we deem it to be attorney opinion work product and privileged from disclosure.

Item II.7 is a letter from a consultant to Counsel for Suffolk County enclosing a list of consultants qualified to review "our work." This reference to "our work" does raise the question of whether these persons would be employed in this litigation or as reviewers of the County's own plan (which is not work product). However, on balance this does seem to be generally related to litigation preparation, and we will consider this material to be ordinary work product. We do not

believe this information to be disclosable as LILCO has no apparent need to know such information.

Group III (Executive Privilege Claimed)

1. A document authored by Fred Finlayson titled "Criteria for Establishing EPZ Boundaries."
2. A memo to Frank Jones, Deputy County Executive, from Philip B. Herr, dated May 12, 1982, regarding radiological emergency response plan demographics.
3. Meeting notes authored by Peter Polk regarding review of LILCO on-site plan.
4. Meeting notes authored by Peter Polk, dated April 29, 1982, regarding Suffolk County radiological emergency response plan.
5. All Steering Committee minutes.
6. A letter to Dr. Lee Kopelman, Executive Director, Nassau/Suffolk Regional Planning Board, from Richard A. Strang, Director of Traffic Safety, dated February 23, 1982, regarding legislation regarding emergency response planning.

Item III.1 is a factual technical summary of criteria which should be considered in establishing emergency planning zone boundaries, describing the NRC guidelines as they have been applied with respect to certain other nuclear facilities. We do not believe it to contain advisory opinions or recommendations protected by the executive privilege. Accordingly, we direct that this item be disclosed.

Item III.2 is a memo to the Deputy County Executive from a consultant regarding the Suffolk County plan and related demographics. As this letter discusses options for the use of demographics for planning purposes, we believe it to be a predecisional document protected by the executive privilege.

We believe that LILCO has demonstrated sufficient need for this document to overcome this privilege. Once again, LILCO needs this information to ensure that its plan is coordinated with the County's and/or to be prepared to litigate this matter with the County, should their positions differ. We therefore conclude that this item should be disclosed. Furthermore, since the attachment to this document is a factual statistical population table, we find it to fall outside the executive privilege and to also be discoverable. Accordingly, both of these matters should be disclosed.

Items III.3 and III.4 are minutes of meetings held between the County's attorneys and consultants to discuss LILCO's and the County's Plans, respectively. These minutes do contain recommendations, advice and opinions and are therefore entitled to the executive privilege. LILCO has not demonstrated any need for these items and they need not be disclosed.

Item III.5 is described by the County as "all Steering Committee minutes." What has been provided to the Board is three pages of minutes from one Steering Committee meeting held April 12, 1982. While it is unclear to this Board how these Steering Committee minutes are distinguished from Steering Committee "activity reports," such as Items VII.4 and VII.5, we assume, since we have not been otherwise informed, that this report is, in fact, "all Steering Committee minutes" and not just an example.

As this item does discuss advice, opinions and recommendations regarding the scoping (and personnel involved) of the County's plan, we deem it to be entitled to the executive privilege. There are few, if any, technical substantive facts and matters included. LILCO has shown no particular need for this item and it need not be disclosed.

Item III.6 is a letter to the Executive Director of the Nassau/Suffolk Regional Planning Board from the Suffolk County Director of Traffic Safety with regards to legislation related to emergency response planning. It contains predecisional advice and opinions on legislative options. Even though the County notes that this legislative proposal was never acted upon, we believe this document to be entitled to executive privilege based upon the authorities which we have cited above. As LILCO asserts no reason why we should hold otherwise, there is no need for disclosure of this item.

Group IV (Attorney-Client Privilege Claimed)

1. Memorandum from Frank R. Jones, Deputy County Executive, to Herbert H. Brown, Esq., dated April 16, 1982, regarding supplements to March 29 draft emergency evacuation documents submitted to NRC.
2. A letter from Christopher M. McMurray to Patricia Dempsey, Esq., County Attorney's office, dated May 10, 1982 regarding scope of services for Kai Erikson and Jim Johnson.

Item IV.1 is a memorandum from the Deputy County Executive transmitting documents related to draft emergency evacuation planning to an attorney for submittal to the NRC. The enclosures to this document are not included in this *in camera* submittal, presumably because they were submitted to the NRC and are thus no longer confidential. This document discusses legal services to be performed by the attorney, even though it has no apparent substantive content. It is therefore entitled to the attorney-client privilege.

Item IV.2 is a letter to an in-house County attorney from an outside attorney representing the County in this litigation enclosing the proposed scope of services for several consultants. As this letter relates, at least in part, to the services of consultants involved in litigation on behalf of the County, we hold this document to be privileged from production under the attorney-client privilege even though it has no apparent substantive content.

The enclosure to this letter (the proposed scope of services) is not included in this *in camera* submittal, presumably because it has already been disclosed. LILCO states in its Reply, at 17, that it believes that it has a copy of this document.

Group V (Work Product Privilege Claimed)

1. Letter from Philip B. Herr to Christopher McMurray, Attorney, dated July 6, 1982 regarding panel on behavior under stress.
2. Letter from Christopher M. McMurray to Dr. Fred Finlayson, dated July 15, 1982 regarding LILCO testimony on PRA.
3. Letter from Christopher M. McMurray to Robert J. Budnitz, dated July 15, 1982 regarding LILCO testimony on PRA.
4. Letter from Christopher M. McMurray to Dr. Fred Finlayson, dated July 13, 1982 regarding social survey.
5. Letter from Fred C. Finlayson to Christopher M. McMurray, dated July 1, 1982 regarding interaction with authors of SAI and PL&G reports.
6. Letter from Christopher M. McMurray to Dr. Fred Finlayson, dated June 18, 1982 regarding documents pertaining to LILCO's consequence analysis.

Item V.1 is a letter from a County consultant recommending and evaluating persons for a County witness panel on behavior under stress. Clearly this material was prepared in anticipation of litigation by a consultant working at the direction of an attorney and should be accorded at least ordinary work product privilege and perhaps even opinion privilege relating to non-factual litigation strategy. As LILCO does not establish any need for this information, we deem it to be privileged from discovery.

Items V.2 and V.3 are both letters from an attorney to consultants requesting their review of LILCO PRA testimony. While neither of these documents appears to reveal attorney opinions or thought processes, we believe these documents to have clearly been prepared in anticipation of litigation. They are therefore entitled to at least ordinary work product protection, even though their substance is of little value. LILCO has not shown any need for these materials. Therefore, they are held to be privileged from discovery.

Item V.4 is a transmittal letter from a County attorney to a consultant. The County's *in camera* submission shows that with the exception of a handwritten note at the bottom of this letter, the County does not claim work product privilege for this item. We do not believe this sentence or any portion of this letter reveals the opinion, impressions or legal theories of an attorney or other agent. The County asserts that this document was prepared in anticipation of litigation. Response at 13.

As we believe this letter to lack *any* substantive content, we find it difficult to accept that the County believes there to be any reasons to waste this Board's time

ruling on a privilege claim such as this, considering the many “real world” issues which are raised by this proceeding. Based solely on the persons between whom this communication is made we do believe this to be arguably prepared in anticipation of litigation and therefore ordinary work product.

As we do not believe there to be any substance to this letter worth discovering, we cannot imagine that LILCO could possibly need it. We therefore see no need to order it disclosed. The enclosure, a social survey, was disclosed previously.

Item V.5 is a letter from a consultant to a County attorney requesting permission for interaction with the authors of LILCO-sponsored studies regarding various issues. As such, we believe it to be at least partially prepared in anticipation of litigation, even though such discussions might have application to the County’s own planning efforts. We believe this document entitled to ordinary work product protection.

As LILCO could obviously learn of any such interactions from its own consultants, we do not believe it possible for them to demonstrate any need for the disclosure of such information. Accordingly, disclosure of this item is unnecessary, and is considered work product which need not be disclosed.

Item V.6, like *Item V.4*, is a transmittal letter from a Suffolk County Attorney to a consultant, containing no mental impressions or opinions. We afford this non-substantive letter ordinary work product privilege for the same reasons as *Item V.4*, and find this item non-disclosable since there is no reason LILCO could need it.

Group VI (Attorney-Client and Executive Privileges Claimed)

1. Memorandum from Patricia A. Dempsey to Frank R. Jones, dated January 27, 1982 regarding the development of the County’s radiological emergency response plan, interface between the County attorney’s office and the Department of Planning, and the role of the legislature in the preparation of the County’s plan.
2. Memorandum from Patricia A. Dempsey to Frank R. Jones, dated March 12, 1982 regarding Judge Brenner’s order that all parties produce any draft plans prepared for its emergency planning efforts.
3. Memorandum from Chris McMurray to Frank Jones, Chairman SCRERP Steering Committee, dated May 6, 1982 regarding the SCRERP personnel.
4. Letter from Peter A. Polk to Christopher M. McMurray, dated August 4, 1982 regarding establishment of EPZ boundaries.

Item VI.1 is a memorandum from an in-house County attorney to the Deputy County Executive giving legal advice and stating legal opinions about the preparation of the County’s plan. This document is clearly privileged under the attorney-client privilege.

Item VI.2 is a memorandum from an in-house Counsel to the Deputy County Executive discussing recent developments in this proceeding. While this document does not contain attorney advice or opinions, it does appear to clearly fall within the context of rendering legal services. *Item VI.2* should therefore be held privileged as a communication between attorney and client and is not discoverable.

Item VI.3 is a memorandum from a County attorney to the Deputy County Executive and Chairman of the Suffolk County Radiological Emergency Response Plan (SCRERP) Steering Committee summarizing activities which had been undertaken to date. Although prepared by an attorney, this document does not contain legal advice, opinions or appear to display services of a legal nature. In fact, the author appears to have served as the recorder charged with preparing the minutes of the meeting. We therefore conclude that the attorney-client privilege does not apply.

Nor do we believe this material to be protected by the executive privilege. This appears to be merely a factual account of who is doing what in preparing the County plan, not a predecisional document containing advisory opinions, recommendations or deliberations. Accordingly, the document should be disclosed.

Item VI.4 is a communication from a County consultant to a County attorney stating the establishment of Suffolk County's EPZ limits. We do not believe the attorney-client privilege to apply to these facts. This letter does not seek legal advice, nor do we believe that a County consultant should be considered the attorney's client.

We do not believe this matter to be protected by executive privilege, since it appears to be purely factual in nature and does not contain advice, opinions or recommendations. Accordingly, we order that *Item VI.4* be disclosed.

Group VII (Executive Privilege Claimed)

1. Activity report by Kathleen Goode, Suffolk County Executive's office, dated June 18, 1982 regarding meeting between PRC Voorhees and Department of Emergency Preparedness.
2. Memorandum from Charles R. Skinner to Frank Jones, Deputy County Executive, dated June 21, 1982 regarding public education about SCRERP.
3. Memorandum from Charles R. Skinner to Frank Jones, Deputy County Executive, dated June 21, 1982 regarding meeting with Director of Fire Safety, Ron Buckingham.
4. Activity report by Kathleen Goode, County Executive's office, dated June 4, 1982, regarding SCRERP Steering Committee meeting.
5. Activity Report by Kathleen Goode, County Executive's office, dated July 1, 1982 regarding meeting of Steering Committee.

Item VII.1 is a description of those matters discussed in a meeting between the County Department of Emergency Preparedness and representatives of a consulting firm. While we believe portions of this document to be entitled to executive privilege, we also believe some portions to be disclosable as they recite only facts, not advisory opinions, recommendations and deliberations. We conclude, however, that LILCO's need for this information, both in this litigation and in attempting to coordinate its planning efforts with those of the County, together with its unavailability from other sources requires the production of this document in its entirety. Therefore, Item VII.1 shall be disclosed.

Item VII.2 is a memorandum from the Office of Management and Research to the Deputy County Executive making certain predecisional recommendations for public education and training. Clearly this is a matter privileged under the executive privilege. We do not know whether these recommendations were followed. We therefore cannot objectively determine the need of LILCO, but LILCO cannot tell us without knowing the document's contents. Accordingly, on a close call, we hold this item should be disclosed to LILCO under a confidentiality agreement to be signed by LILCO. If LILCO determines that it needs to use this document in the case, we will consider at that time whether such disclosure should be limited, and if so, the extent of any limitation.

Item VII.3 is also a memorandum from the Office of Management and Research to the Deputy County Executive, describing points made at a meeting with the Director of Fire Safety. This document is largely factual in nature. The County apparently recognizes this, as its September 10, 1982 *in camera* submission claims executive privilege for only the third (numbered "1"), fourth (numbered "2") and last paragraphs of this memorandum. While arguably these three paragraphs might be said to contain opinions and thus be protected by executive privilege, we believe LILCO's need for this information, both for litigation and in coordinating its plan with the County's, far outweighs any need for secrecy which the County might have for this information; this is because NUREG-0654 requires coordination of LILCO's and the County's response plans. The County's asserted need for secrecy of this information is an anathema to this idea. Accordingly, we order that this document be disclosed in its entirety.

Items VII.4 and VII.5 are "Activity Reports" of Steering Committee meetings. Based upon the markings in the County's September 10, 1982 *in camera* submission, it appears that the County only claims privilege for three paragraphs in Item VII.4 (the first, second and fourth paragraphs under the heading "summary of discussions") and one and one-half paragraphs in Item VII.5 (the third and last portion of the fourth paragraphs under the heading "Report"). We believe the materials to be privileged, as claimed by the County, since they contain preliminary opinions and recommendations. We do not believe there is a need for LILCO to obtain this preliminary matter.

The portions of Items VII.4 and VII.5 which the County asserted in its September 10 to be privileged need not be disclosed. The County should disclose the remaining portions of these items, for which no privilege was asserted.

Group VIII (Attorney-Client Privilege Claimed)

1. A memorandum from Patricia A. Dempsey, Assistant County Attorney, to David J. Gilmartin, County Attorney, and Frank R. Jones, dated August 7, 1981 regarding the County's contract for preparation of a Shoreham radiological emergency response plan and a resolution by Legislator Prospect containing certain provisions for that contract.
2. A memorandum from Herb Brown to Frank Jones, undated (but subsequent to Kirkpatrick, Lockhart, Hill, Christopher & Phillips' retention in February 1982), regarding expenditure of County funds for the purposes of effecting and implementing a radiological emergency response plan.
3. A memorandum to Frank Jones from Herb Brown, undated, regarding a draft letter from Peter F. Conalan to LILCO.
4. A memorandum from Frank Jones to Herb Brown, Esq., dated April 29, 1982, regarding a meeting scheduled for May 13, 1982 with LILCO, FEMA, and the NRC Staff.

Item VIII.1 is a memorandum from a County attorney to another County attorney and to the Deputy County Executive discussing a proposed contract between the County and LILCO and a resolution containing proposed language for that contract. This communication is clearly covered by the attorney-client privilege as it occurred during the course of rendering legal services and advice. It need not be disclosed.

Item VIII.2 is a memorandum from Counsel for the County to the Deputy County Executive consisting of draft language for a proposed resolution regarding the expenditure of County funds for the purposes of effecting and implementing a radiological emergency response plan. It is clearly a predecisional communication involving legal advice and services and is therefore privileged from production.

Item VIII.3 is a memorandum from a County attorney to the Deputy County Executive commenting on a draft letter to LILCO from the County Executive. The County's September 10 *in camera* submission indicates that the County seeks only to assert this privilege for the text of the attorney's handwritten note to the Deputy County Executive. The draft letter itself was presumably sent since no privilege is claimed for it. This memo, including the handwritten note which is devoid of any substance, contains no legal advice. Indeed, it appears to be a mere transaction of the County's own business, unrelated to either the litigation at hand or any legal requirements. We therefore conclude the attorney-client privilege does not apply to this document and order it disclosed.

Item VIII.4 is a memorandum from the Deputy County Executive to a County attorney advising him of a meeting scheduled with LILCO, FEMA, and the NRC Staff. We believe the first paragraph of this memo to be revealed by the County's description of this item. Arguably, the second paragraph of this memo does seek the attorney's legal advice, even though we believe that asserting privileges for such matters, devoid of any substance, to be a patently ludicrous waste of the County's time and resources, not to mention LILCO's or our own. We order that this memo be disclosed with the second paragraph deleted.

Group IX (Attorney-Client and Executive Privileges Claimed)

1. A memorandum from Patricia A. Dempsey to Frank R. Jones, dated March 16, 1982, regarding Shoreham licensing proceedings — funding for ERG and MHB.
2. A memorandum from Patricia A. Dempsey, Assistant County Attorney, to Frank R. Jones, Chairman of the Steering Committee, dated June 7, 1982, regarding the County's radiological emergency response plan and contracts with consultants providing services for that plan.

Item IX.1 is a memo from an in-house County attorney to the Deputy County Executive, discussing an attached funding resolution. We believe this matter to contain predecisional advice, recommendations and opinions. We do not believe these opinions to be of a legal nature, but instead, intended to carry out the County's own intragovernmental business. Therefore, while we do not believe this matter protected by attorney-client privilege, we do find it to be privileged under the executive privilege. We do not believe that LILCO has any need for such funding resolutions and find this item to be protected from disclosure.

Item IX.2 is also a memorandum from an in-house County attorney to the Deputy County Executive discussing the costs of the services of the consultants assisting in preparing its emergency response plan. Our analysis of this document and the privileges claimed by the County is similar to that which we stated for *Item IX.1*. However, here we believe the first of the three vertical columns of the attachment describing the scope of services for each consultant, to be necessary information for LILCO to prepare for the litigation. We do not know if the information was otherwise made available. Accordingly, we direct that the first column of the attachment be disclosed since it involves little, if any, advice or opinions, but that the cover memorandum and remainder of the attachment need not be disclosed.

Group X (Executive Privilege Claimed)

1. A memorandum to Frank Jones from Hal Bishop, Research Analyst, Suffolk County, dated November 19, 1981, regarding divergent views of Planning Department and Emergency Preparedness Department re: location of the alarm center for Shoreham and making recommendation to resolve that issue.
2. A memorandum from David J. Buckley, Chief of Headquarters, Suffolk County Police Department, to Chief Inspector DeWitt C. Treder, dated May 11, 1982, regarding the provisions of a draft license agreement between LILCO and SCPD for co-habitation of radio towers. Attached are the following:
 - A. Memorandum from Roy E. Monaco to E. W. Quinn, dated April 29, 1982, regarding a draft agreement intended to cover installations of radio equipment by LILCO and SCPD on each other's properties.
 - B. The draft agreement referred to in the immediately preceding document.
 - C. A memorandum from Ed Quinn to Wes Chupp, dated May 3, 1982, regarding a revised first draft of the radio tower agreement with LILCO.
3. A memorandum from Hal Bishop, Research Analyst, to John R. Heilbrunn, Principal Research Analyst, dated September 25, 1981, regarding Bishop's review of the outline of the Suffolk County radiological emergency response plan.

Item X.1 is a memorandum from a County research analyst to the Deputy County Executive regarding the divergent views among County planners as to the appropriate location for the Alarm Center for Shoreham. Attached is a memorandum containing predecisional recommendations as to the resolution of that matter. While we do believe a good deal of the information contained in this document to be factual, we do not see any practical way to segregate this factual material from the policy advice and recommendations of the authors. Accordingly, we find this document to be covered by the executive privilege. However, we see a need for LILCO to have this information in order to assure full coordination and if there is a dispute, even to prepare for litigation. It is not clear that this information is available from other sources. Accordingly, this item should be produced.

Item X.2, and attachments A and C all relate to intragovernmental communications regarding a proposed draft license agreement between LILCO and the Suffolk County Police Department for the sharing of radio towers. As the County also asserts privilege as to attachment B, the draft license agreement, we presume this document has not yet been communicated to LILCO. We therefore conclude this matter to be protected from disclosure by the executive privilege as relating to

predecisional matters. Nor do we believe any currently apparent need of LILCO for this information could overcome this privilege, as requiring this release could compromise its bargaining position. *See Federal Open Market Committee, supra*, 443 U.S., at 360. If it later appears there is a dispute threatening coordination between LILCO and the County with regard to this matter, we would entertain a renewed request for the information in this document based upon demonstration of need.

Item X.3 is a memorandum from a County Research Analyst to the Principal Research Analyst regarding provision of his technical and policy comments on an outline of the County Plan. Attached to the memorandum are pages taken from the outline. The memo notes that this outline is one of several and that as the information has not been commented upon, its statements should be viewed as general criticisms.

We have no problem concluding this document to consist of internal comments, advice and recommendations of a predecisional nature, and therefore covered by the executive privilege. At the same time, we note the materials in this item appear to be relevant to the present litigation, as well as in assisting LILCO in its coordination of its planning efforts with those contained in the County plan. We are unaware of any information in the drafts of the County plan which have been released to date which provides this information. We assume the County previously has provided the attachments at the time the Board required that the draft plans be furnished. In light of LILCO's need for this information and its unavailability from other sources, we are ordering that Item X.3 be disclosed.

V. ORDER

It is therefore ORDERED that the County produce as soon as possible the documents and portions of documents as described above. A summary listing of our rulings is attached as Appendix A.

FOR THE ATOMIC SAFETY
AND LICENSING BOARD

Lawrence Brenner, Chairman
ADMINISTRATIVE JUDGE

Bethesda, Maryland
September 22, 1982

APPENDIX A

Summary of Rulings

Group I

1. Disclosed
2. Disclosed
3. Privileged
4. Privileged

Group II

1. Disclosed
2. Privileged
3. Disclosed
4. Disclosed
5. Privileged
6. Privileged
7. Privileged

Group III

1. Disclosed
2. Disclosed (Attachment ordered disclosed)
3. Privileged
4. Privileged
5. Privileged
6. Privileged

Group IV

1. Privileged
2. Privileged

Group V

1. Privileged
2. Privileged
3. Privileged
4. Privileged
5. Privileged
6. Privileged

Group VI

1. Privileged
2. Privileged
3. Disclosed
4. Disclosed

Group VII

1. Disclosed
2. Disclosed (under confidentiality agreement)
3. Disclosed
4. Privileged (Disclose unprivileged portions)
5. Privileged (Disclose unprivileged portions)

Group VIII

1. Privileged
2. Privileged
3. Disclosed
4. Privileged (Disclosed in part)

Group IX

1. Privileged
2. Privileged (Disclosed in part)

Group X

1. Disclosed
2. Privileged
3. Disclosed

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Andrew C. Goodhope, Chairman
Linda W. Little
Forrest J. Remick

In the Matter of

Docket No. 70-1308
(Application to Modify License
No. SNM-1265 to Increase
Spent Fuel Storage Capacity)

GENERAL ELECTRIC COMPANY
(General Electric Morris Operation)

September 21, 1982

ORDER
GRANTING MOTION TO WITHDRAW APPLICATION AND
DISMISSING PROCEEDING WITHOUT PREJUDICE

On the motion of Applicant, General Electric Company, IT IS ORDERED that for good cause shown General Electric Company is granted leave to withdraw without prejudice its application filed in this matter on April 30, 1977, further

proceedings herein are cancelled, and this proceeding is dismissed also without prejudice.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**Andrew C. Goodhope, Chairman
ADMINISTRATIVE JUDGE**

**Dated at Bethesda, Maryland,
this 21st day of September, 1982.**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Herbert Grossman, Chairman
Dr. Frank F. Hooper
Gustave A. Linenberger**

In the Matter of

Docket No. 50-395-OL

**SOUTH CAROLINA ELECTRIC AND
GAS COMPANY, *et al.*
(Virgil C. Summer Nuclear Station,
Unit 1)**

September 24, 1982

The Licensing Board denies intervenor's request for a stay of the initial decision authorizing the issuance of an operating license, and grants intervenor's further request for leave to reply to NRC Staff's and applicants' oppositions to intervenor's request to reopen proceeding.

RULES OF PRACTICE: STAY TO REOPEN PROCEEDING

In determining whether to grant a stay to reopen the proceeding after the initial decision has issued, the Licensing Board will consider the same four factors specified by 10 CFR §2.788(e) relating to stays pending appeal.

LICENSING BOARDS: EXPERT WITNESSES

If an intervenor cannot present his case, the proper method to institute a proceeding by which the NRC would conduct its own investigation is to request action under 10 CFR §2.206. It is not the Licensing Board's function to assist intervenors in preparing their cases and searching for their expert witnesses.

MEMORANDUM AND ORDER
(Denying Stay and Permitting Intervenor Reply)

MEMORANDUM

On Friday, August 6, 1982, Intervenor Burse orally notified the Board Chairman of allegations made by a former worker concerning improper cadwelding on the vertical rebars in the Summer containment. Intervenor followed on Monday, August 9, 1982, with an oral request for a stay of the Board's August 4, 1982 Supplemental Partial Initial Decision which authorized the issuance of the Summer operating license. After a series of conference calls and the submission by Intervenor of an affidavit of the former cadwelder, a written motion to reopen the record and request for a stay, the Board established a briefing schedule by which Intervenor was to submit his full presentation by August 26, 1982. Applicants and Staff were to submit their responses on or before September 10, 1982. The Board confirmed this briefing schedule in its memorandum dated August 17, 1982. The parties have timely responded to the Board's scheduling requirements.

Intervenor's submittals allege principally that many of the cadwelds on vertical reinforcing bars, when poorly done so that the molten joining metal ran out of the steel sleeve, were improperly patched with melted tiewire. Intervenor alleges that these improperly completed cadweld splices did not develop the required tensile strength of the reinforcing bars as required under the Summer design standards. Other allegations concerned improper scribing of the cadwelds, improper coaching on the cadwelding qualification tests, and improper quality control inspections of the completed cadwelds. Intervenor indicates that he has been unable to obtain expert testimony as to the safety significance of the alleged systematic code violations, although he had contacted a number of intervenor groups, because no one outside of the nuclear industry had qualifications with regard to faulty rebar in a containment structure. However, he requested a further opportunity to respond to Applicants' and Staff's further submittals. He also requested, if necessary, the calling of independent consultants by the Board in order for it to reach an informed decision.

Applicants' and Staff's responses appear to verify some of the alleged improper practices but claim that their extent was exaggerated and that they have no safety significance to the facility. Applicants' and Staff's responses were amply supported by documentation and affidavits of qualified experts.

Motion for Stay

Under 10 CFR §2.788(e), the Board must consider the following factors in ruling on a stay:

- (1) Whether the moving party has made a strong showing that it is likely to prevail on the merits;
- (2) Whether the party will be irreparably injured unless a stay is granted;
- (3) Whether the granting of a stay would harm other parties; and
- (4) Where the public interest lies.

Technically, 10 CFR §2.788 applies only to requests for a stay pending the appeal of matters already ruled upon by the Board. Here, Intervenor is requesting a stay in order to reopen the proceeding to offer new evidence. However, the four factors of §2.788(e) are those generally applied by the courts in determining stay applications, as set forth in the seminal opinion in *Virginia Petroleum Jobbers Assoc. v. FPC*, 259 F.2d 921, 925 (D.C. Cir. 1958).

On the basis of the documents submitted by the parties, Intervenor could not hope to satisfy the four-factor test for a stay. His contention that there have been improper practices involving safety related structures has been verified, at least in part, by Staff and Applicants. However, as Intervenor appears to admit (Intervenor's affidavit at 3) he has not been able to establish the safety significance of the alleged violations. Applicants and Staff, on the other hand, strongly deny any safety significance and have strong supporting documentation.

Consequently, Intervenor has not shown that he is likely to prevail on the merits, that he will be irreparably injured by the operation of the Summer facility, or that the public interest requires that the plant not operate. Nor has he even attempted to show that Applicants and their customers would not be substantially harmed in an economic sense by the suspension of the operations of the Summer facility.

The Board has no choice but to deny the motion for stay.

Motion to Reopen

It is well settled that the proponent of a motion to reopen the record bears a heavy burden. *Kansas Gas and Electric Company and Kansas City Power and Light Company* (Wolf Creek Generating Station, Unit No. 1), ALAB-462, 7 NRC 320, 338 (1978). This is Intervenor's fourth attempt to reopen the record. The first was granted, in part, and the others denied. The standards for reopening a record and the numerous NRC cases establishing those standards were discussed in the Board's orders relating to the prior motions to reopen. We need not discuss all of those standards now. One of those standards, whether the motion addresses a significant safety or environmental issue, cannot be adequately evaluated on the current submittals. Although the submittals appear to establish safety violations, Staff's and Applicants' allegations that the safety violations have no safety significance have not been rebutted by Intervenor. If Intervenor cannot establish any safety significance to the improper practices, there is, of course, no purpose to reopening the record for a further hearing.

To justify the granting of a motion to reopen, the moving papers must be strong enough, in light of any opposing filings, to avoid summary disposition. *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), ALAB-138, 6 AEC 520, 523 (1973). In light of the demonstrated safety violations and the time constraints necessitated by the pending motion for stay, which may have hindered Intervenor's search for qualified experts, we will permit Intervenor's further response before deciding whether his moving papers are sufficient to avoid summary disposition and whether the other tests for reopening a record are met. Intervenor is given until October 18, 1982 to reply to Staff's and Applicants' responses.

We see no reason to grant Intervenor's further request that the Board call independent consultants to assist him. If Intervenor cannot present his case, the proper method to institute a proceeding by which the NRC would conduct its own investigation is to request action under 10 CFR §2.206. It is not the Board's function to assist Intervenor in preparing their cases and searching for their expert witnesses. This matter is unlike the situation involving the original seismic presentation in this proceeding where the Board had reason to suspect that the proffered evidence was inaccurate, incomplete, or otherwise unreliable.

ORDER

For all of the foregoing reasons and based upon a consideration of the entire record in this matter, it is, this 24th day of September, 1982,

ORDERED

- (1) That Intervenor's motion for stay *is denied*;
- (2) That Intervenor is given until October 18, 1982 to file a reply (including necessary affidavits) to Staff's and Applicants' responses to his motion to reopen; and
- (3) That Intervenor's request that the Board call independent consultants on this matter *is denied*.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Herbert Grossman, Chairman
ADMINISTRATIVE JUDGE

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

John F. Wolf, Chairman
Glenn O. Bright
Jerry R. Kilne

In the Matter of

Docket Nos. 50-275-OL
50-323-OL

PACIFIC GAS AND ELECTRIC COMPANY
(Diablo Canyon Nuclear Power Plant,
Units 1 and 2)

September 27, 1982

In response to an NRC Staff motion, the Licensing Board clarifies certain matters pertaining to its Initial Decision of August 31, 1982.

MEMORANDUM
IN RESPONSE TO NRC STAFF'S MOTION FOR CLARIFICATION
OF THE LICENSING BOARD'S INITIAL DECISION DATED
AUGUST 31, 1982

The Board analyzes the arguments set forth in the motion as follows:

(a) FEMA Finding on State Plan

The Board finds that the NRC's argument is not well taken in that the necessary findings regarding the State plan have not been made in the record. While there is reasonable assurance on the record that the State plan is substantially completed,

Section 50.47 explicitly requires FEMA findings of adequacy before an operating license may issue. The record does not contain such findings. The Board has concluded that the interim findings of FEMA do not meet that requirement.

The fact is that testimony in the record shows that a FEMA review was to take place in July of this year, subsequent to the hearing. The Board concludes that the results of that review should be submitted to the NRC Staff prior to the issuance of a full power license.

(b) Standard Operating Procedures (SOPs)

The NRC Staff's interpretation that the Licensing Board intended this requirement to apply only to the authentication of SOPs for County organizations within the Federal plume exposure pathway EPZ is correct.

(c) Acquiescence by State Jurisdiction to SOPs

Requirement (b) in the Initial Decision of August 31, 1982 on page 218, refers to the same matter discussed in the previous question.

(1) Action that would constitute "acquiescence" as used in the condition refers to the signature on the plan as an authentication on each individual SOP which in sum would constitute the plan.

(2) "State jurisdiction" includes any jurisdiction, within the Federal Emergency Planning Zones from which SOPs are required.

(3) The Federal regulation referred to is 10 CFR 50.47(c)(2), which defines the Federal Emergency Planning Zones.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

**John F. Wolf, Chairman
ADMINISTRATIVE JUDGE**

**Glenn O. Bright
ADMINISTRATIVE JUDGE**

**Jerry R. Kline
ADMINISTRATIVE JUDGE**

**Dated at Bethesda, Maryland,
this 24th day of September, 1982.**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**Ivan W. Smith, Chairman
Dr. Walter H. Jordan
Dr. Linda W. Little**

In the Matter of

**Docket No. 50-289
(Restart)**

**METROPOLITAN EDISON COMPANY
(Three Mile Island Nuclear
Station, Unit No. 1)**

September 29, 1982

The Licensing Board rules that it is without jurisdiction to rule on intervenor's motion to reopen the record after issuance of the Board's initial decision on the subject of the motion.

LICENSING BOARD: JURISDICTION

After the issuance of a licensing board's initial decision on a particular issue, exclusive jurisdiction over the issue lies with the appeal board. Section 2.717(a) of the Rules of Practice is reconcilable with §2.718(j) in that the identity of the presiding officer with exclusive jurisdiction over a particular issue changes as the proceeding moves up the appellate ladder. The parties should not be able to bestow jurisdiction on a presiding officer by selecting the tribunal for the relief sought by a motion.

MEMORANDUM AND ORDER

The intervening Aamodt Family has filed with this Board a pleading dated September 3, 1982 which we deem to be a motion to reopen the evidentiary record of this proceeding.¹ The matter pertains to the discovery of unsecured radiation worker examination papers at TMI by Licensee's Radiological Assessor. It was the subject of a Board Notification (BN-82-84) to the Appeal Board on August 17, 1982. The incident related to the subject matter of the reopened proceeding on cheating which was concluded by our Partial Initial Decision of July 27, 1982, LBP-82-56, 16 NRC 281. The Aamodt Family was active in the issue of possible cheating on radiological work permit examinations. *Id.* at ¶2226, p. 333.

This Board lacks jurisdiction over the subject matter of the motion. We grant Licensee's request to forward the matter directly to the Appeal Board without delay.²

One may perceive an inconsistency between two NRC regulations pertaining to the termination of jurisdiction of presiding officers in a particular proceeding. Section 2.717(a) of the Rules of Practice provides, as pertinent, that the jurisdiction of a presiding officer designated to conduct a hearing terminates when the Commission renders a final decision. But Section 2.718(j) authorizes a presiding officer to reopen a proceeding for the reception of further evidence at any time prior to initial decision.³

In *Northern States Power Company, et al.* (Tyrone Energy Park, Unit 1), ALAB-464, 7 NRC 372, 374, n.4 (1978), the Appeal Board declined to endorse a Licensing Board ruling that it lacked jurisdiction to consider a motion to reopen *received* after the Licensing Board's final decision. There the Appeal Board suggested that the Licensing Board may have been in error on the jurisdiction question because the motion to reopen was *mailed*, thus served, before the Licensing Board's decision. See 10 CFR 2.712(d)(3). There was no suggestion in *Tyrone* that there might have been any other basis for continued licensing board jurisdiction, *e.g.*, Section 2.717(a). The Appeal Board assumed jurisdiction and disposed of the motion to reopen on its merits.

Again in *Duke Power Company* (Perkins Nuclear Station, Units 1, 2 and 3), ALAB-597, 11 NRC 870 (1980), the Appeal Board let pass an opportunity to rule on a similar jurisdictional question. There the Licensing Board had determined that

¹ Aamodt Motion for the NRC Staff and the Licensee to Show Good Cause and/or Reopening of Record, September 3, 1982.

² Licensee's September 20 Answer at 2, n.1.

³ An exception to the apparent termination of jurisdiction under Section 2.718(j) may be found in Section 2.771(a) which authorizes a petition for reconsideration of a decision within ten days after the date of the decision. Appeal boards have imputed the reconsideration jurisdiction under Section 2.771(a) to licensing boards. *Consumers Power Company* (Midland Plant, Units 1 and 2), ALAB-235, 8 AEC 645 (1974); *Commonwealth Edison Company* (Byron Nuclear Power Station, Units 1 and 2), ALAB-659, 14 NRC 983, 985, n.2 (1981).

it had jurisdiction over an intervention petition raising, *inter alia*, issues already finally decided by that Board, but the Board delayed ruling on the merits of the petition until the Appeal Board could act on the jurisdictional question. Noting that the Licensing Board, having assumed jurisdiction, should not have delayed its consideration of the petition's merits, the Appeal Board nevertheless questioned the Licensing Board's analysis of the jurisdictional issue. The Appeal Board indicated that the correct analysis should be whether the Licensing Board retained jurisdiction over the subject matter of the intervention petition, considering that the Licensing Board had made its final decision on that very subject, as compared to a determination as to whether the Licensing Board had lost jurisdiction over the entire proceeding. *Id.*⁴ Rather than resolving the matter on a jurisdictional basis, the Appeal Board in the *Perkins* matter simply assigned the matter, as if on remand, to the Licensing Board for a merits determination on the practical grounds that the Licensing Board was more familiar with the record.

The issue of divided jurisdiction, or, better stated, the issue of concurrent compared to exclusive jurisdiction, has arisen twice in this proceeding. In its unpublished order of March 4, 1982, at 2, the Appeal Board indicated that requests addressed to this Board for changes in our decision, should now be addressed to that Board, but that, in any event, our views might be useful on review. In an unpublished order of September 10, 1982, the Appeal Board recognized that the instant Aamodt motion was pending before this Board but specifically expressed “. . . no opinion on either the merits of the request to reopen or the Licensing Board's jurisdiction to rule on it.” *Id.* at 4, 5, n.1. Moreover, in commenting on the Aamodt motion the Appeal Board made no reference to any possible convenience or utility in having this Board dispose of the matter on the merits.

We do not read too much into this silence in that the motion was addressed to us, not the Appeal Board. But on the other hand, we see no reason to volunteer our views on the merits of the motion since the subject matter is simple and discrete. In ALAB-685, 16 NRC 449 (1982) the Appeal Board indicated its intention to review the entire record of this proceeding *sua sponte*. We see no benefit to the parties or the Appeal Board in adding an unneeded determination for appellate review.

Following a Licensing Board's initial decision, the Appeal Board in *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-598, 11 NRC 876 (1980), accepted jurisdiction over a motion to reopen the record on seismic issues, granted the motion and proceeded toward a decision on the factual merits. Therefore, following the *Diablo Canyon* precedent, if any jurisdiction whatever remains with this Board — which it does not — it would, at

⁴ However, in an earlier aspect of that same *Perkins* issue, ALAB-591, 11 NRC 741, 742, n.3 (1980), the Appeal Board noted that the fact that there was divided jurisdiction over a licensing proceeding between the two boards might render the issue of jurisdiction more difficult than if jurisdiction had passed entirely from the Licensing Board. Again the Appeal Board expressly declined to rule on jurisdiction over the merits of the petition to intervene.

most, be a jurisdiction shared concurrently with the Appeal Board over the issue in question.

The sole procedural difference between this motion and the motion accepted by the Appeal Board in *Diablo Canyon*, is that here the movant selected the Licensing Board, but in *Diablo Canyon* the movants selected the Appeal Board. This is an unsatisfactory method to determine jurisdiction. The better NRC practice is for jurisdiction over the subject matter of a particular issue to reside exclusively with one presiding officer. To allow the parties to bestow jurisdiction by selecting the tribunal would be a very questionable practice. To maintain a system of shared jurisdiction over a post-decisional issue would be pointless, and worse. It could lead to confusing simultaneous exercise of jurisdiction by boards, or if the boards tended to be reticent, as unlikely as that might seem, concurrent jurisdiction could result in delay while each board hesitated in deference to the other.

However, aside from the impracticality of shared jurisdiction, the better interpretation of the NRC regulations is that jurisdiction over a particular subject is not simultaneously shared. We noted that Section 2.717(a) might be perceived to be inconsistent with Section 2.718(j). The two sections are logically reconcilable, however. As Section 2.717(a) provides, jurisdiction of the presiding officer continues until the Commission's final decision. But the identity of the presiding officer changes as the proceeding moves up the appellate ladder either as to an entire initial decision or as to particular issues. Section 2.718(j), limiting the power of the presiding officer to reopen a record to any time prior to the initial decision, adequately describes when the jurisdiction, thus the identity of the cognizant presiding officer, changes from licensing board to appeal board.

This is especially the case where an appeal board, wearing the hat of an NRC presiding officer, as in *Diablo Canyon*, takes evidence. It is also the case where, as is the NRC practice, appeal boards conduct a *sua sponte* review of the entire record.

The established practice of remanding a post-decisional matter to a licensing board where that approach is practicable seems to work well, and is consistent with the NRC's overall procedural scheme.

Another jurisdictional aspect of the Aamodt motion must also be addressed. The Commission, not the Appeal Board, has jurisdiction over whether the TMI-1 shutdown order should be lifted in accordance with the Board's three partial initial decisions in favor of restarting the unit. CLI-81-19, 14 NRC 304 (1981). There is, of course, no question about where jurisdiction lies over the short-term pre-restart issues with respect to this Board *vis-a-vis* the Commission. All jurisdiction has passed from us. We do not know how thoroughly the Commission can evaluate the record of this proceeding in its "immediate effectiveness" review, but given the short time period it has established for its review (*id.* at 305) and because of the obvious press of other matters demanding its attention, the Commission's review necessarily must be something less than the *sua sponte* review of the entire record

promised to be undertaken by the Appeal Board in ALAB-685. Therefore we believe that it might be helpful to the Commission and the parties for us to comment on the short-term significance of the Aamodt motion.

Board Notification (BN-82-84) reporting the unsecured radiation worker examinations to the Appeal Board was also served on this Board. Because of the special nature of this proceeding, this Board, without regard to the niceties of jurisdiction, would have notified the Commission *sua sponte* if we had believed that the incident raised safety or management issues so important that our conclusions regarding short-term items and favoring restart were brought into question. After considering the Aamodt motion and the Licensee's factual response, we remain of the opinion that the incident raises no significant short-term issues. Although the Aamodt motion (at 1) refers in general terms to "conditions to restart" and the Commission's immediate effectiveness review, the motion was addressed solely to this Board and requests only that the record be reopened if the Licensee and Staff cannot show good cause why it should not be reopened. If the motion has merit, it relates only to the long-term issues now within the jurisdiction of the Appeal Board.

Accordingly, without expressing an opinion on the merits of the motion, we refer it and the attendant pleadings to the Appeal Board.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Ivan W. Smith, Chairman
ADMINISTRATIVE LAW JUDGE

Bethesda, Maryland
September 29, 1982

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Marshall E. Miller, Chairman
Dr. Kenneth A. McCollom
Dr. Richard F. Cole

In the Matter of

Docket Nos. 50-445
50-446
(Application for
Operating License)

TEXAS UTILITIES GENERATING COMPANY, *et al.*
(Comanche Peak Steam Electric Station,
Units 1 and 2)

September 30, 1982

The Licensing Board directs the Staff to identify by name individuals identified by letter of the alphabet in an inspection report which the Staff introduced in evidence, and to produce unexpurgated copies of signed statements taken from those individuals. If the Staff fails either to comply with or seek appellate review of this order, the Licensing Board indicates it will impose sanctions upon Staff counsel.

RULES OF PRACTICE: INFORMER'S PRIVILEGE

Informer's privilege applies only to those who confidentially volunteer information to government officials charged with enforcing a law, not to everyone interviewed during the course of an ensuing investigation.

RULES OF PRACTICE: INFORMER'S PRIVILEGE

A single request for confidentiality cannot be used to shield an entire investigation from scrutiny in an adjudicatory setting.

OPERATING LICENSE PROCEDURES: RESPONSIBILITIES of LICENSING BOARD AND NRC STAFF

It is improper for the NRC Staff to attempt to dictate to the Licensing Board what matters it may or may not consider. The Licensing Board is the sole judge of its informational needs and is not required to act merely as an umpire calling balls and strikes.

OPERATING LICENSE PROCEDURES: RESPONSIBILITY OF LICENSING BOARD

The Licensing Board has the right and duty to develop a full record for decision-making in the public interest. The independence and integrity of licensing boards is fundamental to due process.

ATOMIC ENERGY ACT: HEARINGS

Congress has authorized the NRC to provide hearings upon the request of any person whose interest may be affected by the licensing process and to establish licensing boards to conduct such hearings.

RULES OF PRACTICE: DUE PROCESS

The Rules of Practice in Part 2 of 10 CFR are the method by which NRC ensures that all parties are provided procedural as well as substantive due process.

RULES OF PRACTICE: RESPONSIBILITIES OF COUNSEL

Parties and their representatives are expected to conduct themselves before a licensing board as they would before a court of law.

RULES OF PRACTICE: RESPONSIBILITIES OF COUNSEL

A licensing board is empowered to impose sanctions for a party's failure to obey or seasonably appeal from its order, even if the behavior is based upon the party's belief that the order is invalid.

ORDER DENYING RECONSIDERATION

On August 4, 1982, the Licensing Board issued an Order to Show Cause requiring the Staff to show cause why sanctions should not be imposed for its failure and refusal to obey the Board's orders to identify individuals interviewed in connection with an investigation of an informer's QC allegations, and to produce unexpurgated copies of signed witness statements taken from persons identified by the informer. The inspection report and testimony affirmatively put into evidence by the Staff concerned allegations by a former QC inspector that he was wrongfully fired because of his reporting of construction defects. The circumstances surrounding those orders to produce were described in the Order to Show Cause, and will not be repeated except as necessary to amplify our discussion herein.¹

On August 24, 1982, the Staff submitted its response to the Order to Show Cause. The Staff asked that the Licensing Board reconsider its orders and argued that sanctions against the Staff are inappropriate.² The Intervenor CASE filed an answer to the Staff's response on September 3, challenging many of the arguments it contained. The Staff filed a reply to CASE's answer on September 10, 1982.

Subsequently beginning September 13, another week of hearings was held in this case. At that time the Board stated that it would not reconsider its orders to the Staff to produce the information, and that this written order would follow (Tr. 3578). For the reasons discussed *infra*, the Staff has not shown good cause and sanctions will be imposed unless the orders are obeyed forthwith. The Staff relies upon an "informer's privilege" to justify its obdurate refusal to produce the information as ordered. The Staff argues that in the current situation, express pledges of or requests for confidentiality are not required for an informer's privilege to apply. Having contacted the unidentified individuals in question, the

¹ Since the Order to Show Cause was entered, the Department of Labor has made an additional finding (now under appeal) that Charles Atchison, the individual who approached the NRC with the allegations covered by the investigation reports in question, was improperly fired from a subsequent job at the Waterford nuclear plant. The Department of Labor determined that Mr. Atchison's firing was a result of his having testified in the Comanche Peak proceeding, and was related to personnel connections and relationships between his former employers at Comanche Peak and Waterford. See CASE Exh. 684A.

² By a letter dated August 27, 1982, the Staff informed the Board that four of the unexpurgated witness statements sought by the Board had been admitted into evidence in a Department of Labor hearing on appeal from its first finding, held the week of August 16, 1982. However, the Staff indicated that these further disclosures did not alter its position.

Staff avers that two of the ten individuals now desire confidentiality. However, the Staff refuses to disclose the identities or produce the statements of the other eight individuals, claiming that if it did so someone might be able to deduce the identities of those who wish confidentiality.

The Staff's ostensible position is internally inconsistent. On the one hand, the Staff argues that the Board does not need information on the identities because other witnesses have testified as to their understanding of the identities of those interviewed. On the other hand, the Staff argues that if the individuals who have not sought confidentiality are disclosed, this might confirm the tentative identifications made by Mr. Atchison and the Applicants and lead to conclusions about those not identified. The Staff both relies upon and then illogically deprecates the information available to the Board. In any event, the Staff cannot justify its continued defiance of the Board's orders to produce unaltered witness statements by claiming that the names are now known. This knowledge resulted only from the Board's insistence that underlying documents bearing upon the credibility of a Staff investigation be disclosed after its conclusions were affirmatively proffered by testimony at a public hearing. It constitutes no defense to the Staff's intransigence to show that others have attempted to obey the Board's request for full information after the Staff put on censored testimony.

The Staff also overstates the scope of the informer's privilege. The Staff apparently would apply the privilege so broadly that it could apply to virtually everyone with whom an NRC investigator talks. However, the courts have held that informer's privilege applies only to those who confidentially volunteer information to government officials charged with enforcing a law, not to everyone interviewed during the course of an ensuing investigation. It has been judicially stated:

Generally speaking, therefore, an informer is an undisclosed person who confidentially volunteers material information of violations of the law to officers charged with enforcement of that law. As we understand the term, persons who supply information only after being interviewed by police officers, or who give information as witnesses during the course of an investigation, are not informers.³

Thus, only Mr. Atchison qualified for the informer's privilege, not the Applicants' supervisory personnel whom he identified. Mr. Atchison's role in the investigations has been established through his own testimony after unauthorized disclosure by the Staff. *See, e.g.,* Staff Exh. 197 at 3 (Tr. 2518-19).

The Licensing Board, recognizing the important and sometimes sensitive nature of NRC investigations, has not sought to learn the identify of any individual who has requested confidentiality. Thus, in regard to another investigation, the Board

³ *Gordon v. United States*, 438 F.2d 858, 875 (5th Cir.), cert. denied 404 U.S. 828 (1971); accord, *United States v. Oliver*, 570 F.2d 397, 401 (1st Cir. 1978).

refused to order that individuals interviewed in connection with Investigation Report 81-12 (Staff Ex. 178) be identified, because it was apparent to the Board that the individuals involved desired confidentiality and that the investigation had been conducted in such a way as to achieve it (Tr. 4055-68). However, this does not mean that it is reasonable to withhold *all* information because one or two individuals out of ten or eleven desire confidentiality. A single request for confidentiality cannot be used to shield an entire investigation from scrutiny in an adjudicatory setting.⁴

The Staff recognizes that the informer's privilege, even if it applies, is not absolute. However, the Staff argues that the Board does not need this information. The Board acting in an adjudicatory capacity should be the sole judge of its informational needs, subject only to appellate review (Tr. 2478-83). It is not required to justify its orders to Staff counsel, nor to engage in interminable debate with the Staff which, in effect, rules upon its own objections and finds them good. The Board reviews the conduct and actions of the Staff, not vice versa. It is the responsibility of the Board to balance the need for full information after an issue is partially opened up with the Staff's desire to conceal the underlying bases of its investigator's conclusions. The Board conducting an adversarial evidentiary proceeding is not required to act merely as an umpire calling balls and strikes. Its function as the arbiter of important safety and environmental questions "does not permit it to act as an umpire blandly calling balls and strikes for adversaries appearing before it . . ."⁵ It has the right and duty to develop a full record for decision-making in the public interest. Accordingly, it is immaterial whether the Board or the Intervenor first requested the information. However, as CASE points out, the Staff does not fairly quote the entire transcript reference at Tr. 2501-04, wherein CASE indicated its desire for the information (CASE's Answer, pp. 5-6).

It is improper for the Staff to attempt to dictate to the Board what matters it may or may not consider. Certain powers and duties are given to licensing boards by statute and regulation. The Staff may not interfere with the licensing board in the performance of its adjudicatory duties any more than the licensing board may properly interfere with Staff duties. As the Appeal Board has stated:

"In making this argument, the applicants overlook that the staff is but one of the parties to this licensing proceeding, and that the positions which it may take are in no way binding upon us. The boards have independent

⁴ The cases cited by the Staff for the proposition that all of the identities may be withheld to protect a single identity are easily distinguishable. They refer not to a common law privilege, but to specific statutory exemptions from disclosure. Moreover, those exemptions relate to national security materials, and courts have historically been reluctant to become involved in questions of this nature.

⁵ *Scenic Hudson Preservation Conference v. FPC*, 354 F.2d 608, 620 (2nd Cir. 1965). See also *Greene County Planning Board v. FPC*, 455 F.2d 412, 419 (2nd Cir. 1972); *Calvert Cliffs Coordinating Committee v. AEC*, 449 F.2d 1109, 1119 (D.C. Cir. 1971); *Michigan Consolidated Gas Co. v. FPC*, 283 F.2d 204, 226 (D.C. Cir. 1960); *Cleveland Electric Illuminating Co., et al. (Perry Nuclear Power Plant, Units 1 and 2)*, ALAB-443, 6 NRC 741, 752 (1977).

responsibilities to fulfill, and the actions of the staff cannot compel a board to adopt a particular position.”⁶

The role of the Staff has been described:

“In the first place, contrary to the petitioners’ apparent view, the staff does not occupy a favored position at hearings. We have taken pains to point out that, when a board comes to decide contested issues, it must evaluate the staff’s evidence and arguments in the light of the same principles which apply to the presentations of the other parties. In short, the staff’s views ‘are in no way binding upon’ the boards; they cannot be accepted without passing the same scrutiny as those of the other parties. . . . the applicant’s (or any other party’s) remedy is the same. If it disagrees with the staff’s assessment, it can and should raise the issue in the hearing process and thus put before the licensing board the relative merits of its and the staff’s positions. The final decision lies with the boards, not with the staff.”⁷ (Footnotes omitted)

The Board has determined that in the circumstances of the present case, the information is sufficiently significant that any privilege which may exist should be overridden.⁸ The Board’s reasons for finding the information necessary have been explained both in the transcript and in the Order to Show Cause. The Staff may appeal from the Board’s ruling, but it is not the Staff’s role to debate with the Board the bases for its actions. The independence and integrity of licensing boards is fundamental to due process.

As the Supreme Court has stated, nuclear energy “may someday be a cheap, safe source of power or it may not. But Congress has made a choice to at least try nuclear energy, establishing a reasonable review process in which courts are to play only a limited role. . . . Time may prove wrong the decision to develop nuclear energy, but it is Congress or the States within their appropriate agencies which must eventually make that judgment.”⁹

⁶ *Southern California Edison Company, et al.* (San Onofre Nuclear Generating Station, Units 2 and 3), ALAB-268, 1 NRC 383, 399 (1975).

⁷ *Consolidated Edison Company of New York, Inc.* (Indian Point, Units 1, 2 and 3), ALAB-304, 3 NRC 1, 6 (1976). See also *Public Service Company of New Hampshire, et al.* (Seabrook Station, Units 1 and 2), CLI-76-17, 4 NRC 451, 462 (1976).

⁸ Licensing Boards are charged with conducting hearings and making findings on contentions which concern matters affecting the health and safety of the public. Labor practices such as the firing of employees who report construction deficiencies can have serious safety implications. See *Union Electric Company* (Callaway Plant, Units 1 and 2), ALAB-527, 9 NRC 126, 128-39 (1979). To, in effect, allow the Staff to make this determination rather than to allow it to be adjudicated as part of the hearing on the contention to which it indisputably relates would contravene the hearing rights conferred by Section 189a of the Atomic Energy Act, as amended, 42 U.S.C. 2239(a). Cf. *Duke Power Company, et al.* (Catawba Nuclear Station, Units 1 and 2), ALAB-687, 16 NRC 460, 467 (1982) (to deny petitioners opportunity to file contentions on necessary documents not available before special prehearing conference would contravene hearing rights).

⁹ *Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 557-58 (1978).

Congress by statute has established the authority of the Commission to provide for hearings upon the request of any person whose interest may be affected by the licensing proceeding.¹⁰ The Commission has also been authorized to establish licensing boards to conduct such hearings, each "comprised of three members, one of whom shall be qualified in the conduct of administrative proceedings and two of whom shall have such technical or other qualifications as the Commission deems appropriate to the issues to be decided. . . ."¹¹ The Commission has used its powers to make regulations necessary to carry out the purposes of the Act by formulating Part 2 of 10 CFR, which sets out its Rules of Practice to govern the conduct of adjudicatory hearings. This is the method by which procedural as well as substantive due process of law is accorded to all parties, an indispensable element of administrative hearings.

Under our Rules of Practice, Licensing Boards "function in a quasijudicial capacity. Accordingly, parties and their representatives in proceedings subject to this subpart are expected to conduct themselves with honor, dignity and decorum as they should before a court of law."¹² In the instant proceeding, Staff counsel have steadfastly refused to obey a lawful Board order from its entry on July 27, 1982,¹³ and its reaffirmance in the Order to Show Cause entered August 4, 1982. Oral denial of the Staff's motion for reconsideration of the Order was announced on September 13, 1982 (Tr. 3578). The Staff stated on July 29 that it intended to appeal this order,¹⁴ but it has not done so up to the present date. Its response to the show cause order merely amounts to a continuing argument with the Board, but it does not constitute either compliance with our Orders or a seasonable appeal therefrom. If this were a court of law, such conduct would probably be deemed to be contumacious,¹⁵ and a likely contempt of court (18 U.S.C. §401(3)).

Our Rules of Practice further provide that a Board "may, if necessary for the orderly conduct of a proceeding, reprimand, censure or suspend from participation in the particular proceeding pending before it any party or representative of a party who shall refuse to comply with its directions, or who shall be guilty of disorderly, disruptive, or contemptuous conduct."¹⁶

¹⁰ Atomic Energy Act of 1954, §189; 42 U.S.C. §2239.

¹¹ *Id.*, §191; 42 U.S.C. §2241.

¹² 10 CFR §2.713(a).

¹³ Tr. 2484, 2497, 2559-66, 3041-42, 3050-51, 3056, 3559.

¹⁴ Tr. 3072-73, 3559.

¹⁵ In an unprecedented action, Staff counsel on one occasion actually attempted to direct a witness on the stand (Mr. Driskill) not to answer questions propounded to him by the Board (Tr. 2635). Such unwarranted conduct by any lawyer is obviously in derogation of the authority of the tribunal, as well as the express power of the presiding officer (Board) to "examine witnesses" (§2.718(g)) and to "regulate the course of the hearing and the conduct of the participants" (*Id.* at (e)). The notion that any lawyer can direct a witness not to answer Board questions has a hang time of less than one second, in case anyone is tempted to emulate Staff counsel in this regard.

¹⁶ 10 CFR §2.713(c).

The Staff in its Response to the Order to Show Cause argues that the Licensing Board ignored a direction that, prior to compelling disclosure of the identities of those who have given information to NRC investigators, the Licensing Board should refer its rulings to the Appeal Board. Staff Response at 8 n.10. The direction to which the Staff refers was given in light of an arguable ambiguity between 10 CFR Part 2 and 10 CFR Part 9. See *Northern States Power Company* (Monticello Nuclear Generating Plant, Unit 1), ALAB-10, 4 AEC 390, 399 (1970). In this case, however, the Staff does not rely on 10 CFR Part 9 for its claim of privilege. Therefore, the reason for the required referral does not exist and the Appeal Board direction is not applicable.

The Staff has orally mentioned 10 CFR Part 21 as authority for its position (Tr. 2486), although curiously it does not mention or rely upon it in its Response. It may be that the Staff has now recognized that 10 CFR §21.2 prevents the identification "of anyone so reporting" known or suspected defects only "as authorized by law." Only Mr. Atchison "so reported" suspected defects. The other witnesses were chiefly supervisory personnel who were questioned after their identification by this informer. Inasmuch as the law on informer's privilege does not authorize the withholding of these particular identities, then 10 CFR §21.2 does not expand the privilege beyond its common law limits. See *Houston Lighting and Power Company, et al.* (South Texas Project, Units 1 and 2), ALAB-639, 13 NRC 469, 483 n.6 (1981) (Judge Kohl, dissenting).

The Staff plays a numbers game concerning the number of witnesses it reinterviewed who requested confidentiality. It concedes that the Order to Show Cause concerns only Staff Exhibit 199.¹⁷ Excluding Mr. Atchison whom the Staff identified as Individual A in Exhibit 199, there were individuals B through K, a total of ten (*Id.*, p. 15). According to the Driskill/Herr affidavit, page 2, contacts were made with these Individuals B-K, and only "two individuals requested confidentiality." It is immaterial that there were different results on different reports (one individual on Staff Ex. 123, six as to Ex. 178). Nevertheless, the Staff refers in its Response variously to three individuals (p. 10), 6 (p. 11, n.13, and pp. 20 and 23), and 9 (pp. 20, 23) and then concludes that these various numbers somehow show that "it was fully justified in declining to comply with the Licensing Board's orders," and that the "propriety of the Staff's actions in this regard has been proven correct, as set forth in the attached Affidavits" (*Id.*, p. 22). The total number of Ex. 199 individuals now requesting confidentiality remains only two. Adding this number to others whose disclosure is not here involved (the six involved in Ex. 178 have been expressly excluded by the Board, Tr. 4055-68) to arrive at nine and then to talk about "this newly obtained information" (*Id.*, at 23) is somewhat disingenuous. And this startling information involving only two

¹⁷ NRC Staff's Response, p. 5, n.9.

out of 10 or 11 witnesses remains a bit underwhelming as a defense to defiance of orders.

The Staff is not relieved of its duty to obey an order because the Staff believes the order invalid. Cf. *United States v. United Mine Workers*, 330 U.S. 258, 291-94 (1947), which held that one who violates an order of a court with jurisdiction to enter it may be held in contempt although the order is subsequently set aside on appeal. Not only has the Staff here not obeyed the Board's orders, but it has not sought appellate review despite its avowed intention to do so (Tr. 3559) and the passage of more than two months' time. Although the Staff is a party to NRC proceedings, it is not a super-party entitled to flout orders with impunity.

The Staff argues that "sanctions against Staff counsel are inappropriate in view of the fact that counsel acted in accordance with the professional code of ethics in representing her client's position before the Licensing Board. . . ."¹⁸ This interesting theory of the professional duty of lawyers being limited to avoiding unethical conduct¹⁹ is too coarse a standard for NRC proceedings. It is similar to a politician proclaiming that he is not a crook. Such protestations are merely the beginning of the inquiry into permissible conduct, not the end requiring automatic exculpation.

The Staff's asserted standard was not approved in *Chapman v. Pacific Tel. & Tel. Co.*, 613 F.2d 193 (9th Cir. 1979). In that case, a lawyer refused to comply with a pretrial order of the district court, asserting that the order was confusing and invalid for unconstitutionality. The Court of Appeals stated:

"Mrs. Halvonik argues she was privileged to disobey the court's order because it was invalid. An attorney who believes a court order is erroneous is not relieved of the duty to obey it. The proper course of action, unless and until the order is invalidated by an appellate court, is to comply and cite the order as reversible error should an adverse judgment result." (*Id.* at 197)

This attorney's failure to obey the court order was also deemed to be contrary to the Code of Ethics. The Court held:

"Attorneys, as officers of the court, have a duty to cooperate with the court to preserve and promote the efficient operation of our system of justice.

The Code of Professional Responsibility, Disciplinary Rule 7-106(A) provides:

'A lawyer shall not disregard or advise his client to disregard a standing rule of a tribunal or a ruling of a tribunal made in the course of a proceeding, but he may take appropriate steps in good faith to test the validity of such rule or ruling.'

¹⁸ NRC Staff's Response to Order to Show Cause, p. 23, n.27.

¹⁹ Presumably as described in the American Bar Association's Code of Professional Responsibility, comprised of nine Canons of Ethics, each accompanied by Ethical Considerations and Disciplinary Rules.

The Code further exhorts the lawyer that:

'Rules of evidence and procedure are designed to lead to just decisions and are part of the framework of the law. Thus while a lawyer may take steps in good faith and within the framework of the law to test the validity of rules, he is not justified in consciously violating such rules and he should be diligent in his efforts to guard against his unintentional violation of them' Ethical Code 7-15."
(*Id.*)

The Staff is once again directed forthwith to identify those individuals identified by letters B through K in Inspection Reports 82-10/82-05 (Staff Exh. 199), except those two individuals who asked for confidentiality. Unexpurgated copies of signed statements taken from those identified individuals are also to be produced. If the Staff fails either to obey this order promptly or to seek appellate review, the Licensing Board will use its authority pursuant to 10 CFR §2.713(c) to impose sanctions upon Staff counsel.

It is so ORDERED.

FOR THE ATOMIC SAFETY AND
LICENSING BOARD

Marshall E. Miller, Chairman
ADMINISTRATIVE JUDGE

September 30, 1982

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

Harold R. Denton, Director

In the Matter of

Docket Nos. 50-275
50-276
10 CFR 2.206

PACIFIC GAS & ELECTRIC CO.
(Diablo Canyon Nuclear Power Plant,
Units 1 and 2)

September 22, 1982

The Director of Nuclear Reactor Regulation denies a petition under 10 CFR 2.206 requesting the issuance of an order to Pacific Gas & Electric Co. to show cause why it should not be directed to file amendments to its pending operating license applications concerning the restructuring by PG&E of the Diablo Canyon Project organization and management.

DIRECTOR'S DECISION UNDER 10 CFR 2.206

In a letter dated May 12, 1982, the Joint Intervenor¹ to the Diablo Canyon Nuclear Power Plant licensing proceeding directed a request for action pursuant to 10 CFR 2.206 to the Director of the Office of Nuclear Reactor Regulation. Specifically, Joint Intervenor requested:

"(1) the issuance of an order to show cause why Pacific Gas and Electric Company '(PG&E)' should not be directed to file forthwith the requisite amendments to the pending operating license applications for Diablo Canyon Units in light of the extensive and conceded restructuring by

¹ The San Luis Obispo Mothers for Peace, Scenic Shoreline Preservation Conference, Inc., Ecology Action Club, Sandra Silver, Gordon Silver, Elizabeth Apfelberg, and John J. Forster.

PG&E of the Diablo Canyon Project organization and management; and (2) subsequent to the filing of such amendments, a hearing to determine the consistency of the restructured organization and management with all applicable provisions of the Atomic Energy Act, 42 U.S.C. §§2011 *et seq.* and the Commission's regulations."

They assert that given the breakdown of PG&E's quality assurance program in the past, the extensive restructuring of PG&E and its impact on quality assurance activities must be closely examined to assure that past failures are not repeated. Petition at 5-6.

Their request was supplemented by an additional letter, dated May 25, 1982, which asserted that a license amendment application submitted by PG&E on May 10, 1982, requesting certain changes to its technical specifications for Diablo Canyon Unit 1, did not satisfy the Joint Intervenors' concerns. Notice of receipt of the Joint Intervenors' petition was published in the *Federal Register* on June 22, 1982 (47 FR 26954).

Discussion

On September 22, 1981, following the Licensing Board's low-power decision and Commission review under the immediate effectiveness rule² a license was issued to PG&E for fuel loading and low-power testing up to 5% of rated power for the Diablo Canyon Plant Unit 1. Subsequently, on November 19, 1981, the Commission suspended the low-power license pursuant to 10 CFR 2.202, because new information had been developed which raised doubts about the adequacy of PG&E's quality assurance program.³ The Commission further ordered the licensee to conduct an independent design verification program on all safety-related activities performed prior to June 1978 under all seismic service-related contracts. Verification of quality assurance program effectiveness was identified as a major element of the remedial program. That program is now under way.

On March 22, 1982, PG&E announced that the Diablo Canyon Project Organization was being restructured in order to integrate Bechtel Power Corporation as the project manager, with responsibility for completion of the work necessary to:

- 1) Restore the low-power license for Unit 1,
- 2) Obtain a full-power license for the plant,
- 3) Complete construction of Unit 2, and

² *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Plant, Units 1 and 2), LBP-81-21, 14 NRC 107 (1981); *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-81-22, 14 NRC 598 (1981).

³ *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Unit 1), CLI-81-30, 14 NRC 950 (1981).

- 4) Provide start-up engineering and construction support needed to bring both units into commercial operation.

The role of Bechtel Power Corporation was further clarified in a meeting with NRC personnel on March 25, 1982 and in a letter to the Director of Nuclear Reactor Regulation on April 22, 1982.

For Diablo Canyon Unit 1, Bechtel Power Corporation personnel, as part of the single totally integrated Diablo Canyon Project Organization, will act in support of PG&E personnel to help establish objectives, schedules, programs and to monitor those items. The above activities will be conducted in accordance with the Project Quality Assurance Program. The Project Quality Assurance Program was developed using the previously NRC-approved Bechtel Power Corporation Topical Report on Quality Assurance, BQ-TOP-1, modified to conform to the Diablo Canyon Project Organization. The NRC Staff has reviewed the Project Quality Assurance Program and found it acceptable following receipt of certain additional information contained in the Licensee's letter of August 13, 1982. Bechtel does not plan to do any actual construction work at either Unit 1 or Unit 2, although some design activities involving additional personnel may be performed for Unit 2.

PG&E continues to be in control of the general design and construction of both Units. Consequently, the introduction of Bechtel Power Corporation into the overall Diablo Canyon Project Organization and its related quality assurance program does not represent a significant change to the information supplied by the licensee and reviewed by the NRC concerning the requirements of 10 CFR 50.34(a)(7). Thus, no amendment to the construction permits for the Diablo Canyon facilities is required.⁴

The information required by 10 CFR 50.34(b)(6)(i) and (ii) to be submitted in the Final Safety Analysis Report of the operating license application describes the organizational structure and managerial and administrative controls for the plant during operation. None of the changes described so far by PG&E with respect to Bechtel's participation in the Diablo Canyon project alter previously supplied information concerning how the facilities would function as operational plants.⁵

However, even if the NRC Staff believed at this time that more information is needed with respect to the operating license applications, an order to show cause

⁴ An amendment to a construction permit is only required if there are changes of significance affecting the principal architectural and engineering design criteria and other bases on which the facility was licensed. See *Northern Indiana Public Service Company* (Bailey Generating Station, Nuclear-1), CLI-79-11, 10 NRC 733, 737 (1979), remanded on other grounds, *State of Illinois v. NRC*, 661 F.2d 253 (D.C. Cir. 1981).

⁵ The proposed amendments to technical specifications submitted by PG&E on May 10, 1982 address Technical Specifications which govern the operation of the facility. Thus, Joint Intervenors' concern that these proposed changes are insufficient to address their concerns is misplaced because the technical specifications to be amended do not describe activities at the Unit 1 facility with which Bechtel Power Corporation is involved.

pursuant to 10 CFR 2.202 would be inappropriate. In the course of the review of operating license applications, amendments to the application to supplement or update information previously submitted or to demonstrate compliance with regulatory requirements may be required. A licensee must either provide the amendments voluntarily or in response to Commission requests if consideration of the license application is to continue. As a means of obtaining information for a licensing review, an order pursuant to 10 CFR 2.202 to modify, suspend or revoke a license is unnecessary where no license has issued.

There is an additional reason why I decline to initiate a proceeding with respect to the quality assurance program at the Diablo Canyon project at this time. On June 8, 1982, the Joint Intervenors filed a motion before the Atomic Safety and Licensing Appeal Board requesting that the Board revoke the Diablo Canyon low-power operating license, vacate the Licensing Board's conclusions in its July 17, 1981 Partial Initial Decision as to quality assurance, and reopen the record to consider the quality assurance and quality control issues. In response to that motion, the Appeal Board on July 16, 1982, certified to the Commission questions concerning the extent of its jurisdiction to consider QA/QC issues at Diablo Canyon.⁶

Thus, the question of the necessity and scope of any further proceedings on the issue of quality assurance at the Diablo Canyon project is before both the Commission and the Appeal Board. In view of the pendency of these matters before the Commission and the Appeal Board, initiation of further proceedings by me would be inappropriate. *See Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-81-6, 13 NRC 443 (1981).

For the reasons set forth above, the Joint Intervenors' request is *denied*.

A copy of this decision will be filed with the Secretary for the Commission's review in accordance with 10 CFR 2.206(c) of the Commission's regulation. As provided in 10 CFR 2.206(c), this decision will constitute the final action of the Commission twenty-five (25) days after the date of issuance, unless the Commission on its own motion institutes the review of this decision within that time.

Harold R. Denton, Director
Office of Nuclear Reactor
Regulation

Dated at Bethesda, Maryland,
this 22nd day of September, 1982.

⁶ *Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-681, 16 NRC 146 (1982).

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF EXECUTIVE DIRECTOR FOR OPERATIONS

William J. Dircks, Executive Director for Operations

In the Matter of

Docket No. PRM-2-11

WELLS EDDLEMAN

September 30, 1982

The Commission denies a petition requesting that the Commission amend its rules of practice for domestic licensing proceedings to require a separate operating license hearing for each power reactor unit at a nuclear power plant site on the grounds that the requested amendments are unnecessary, contrary to sound administrative practice, and inconsistent with existing law.

RULES OF PRACTICE: CONSOLIDATION OF HEARINGS

There is no reason to believe that an amendment to NRC regulations to require an exclusive hearing on each reactor unit will result in or enhance the consideration of any issues which could not also have been considered and considered equally well in a hearing on two or more units.

RULES OF PRACTICE: ADMINISTRATIVE FAIRNESS

There is no reason to believe that the class of persons who could be included or excluded from participating in an operating license hearing on two or more reactor units constructed on a multiunit site would be different from the class of persons who would be included or excluded from participating in an OL hearing devoted exclusively to any single reactor unit constructed on the same multiunit site.

OPERATING LICENSE: ISSUANCE

A separate operating license is issued for each reactor unit constructed on a multiunit site even though a consolidated hearing is held on several reactor units.

Before an operating license for a reactor unit is issued, the Commission must make the requisite findings and determinations required by the regulations in effect at the time of license issuance.

RULES OF PRACTICE: CONSOLIDATION OF HEARINGS

Rules of practice permit the Commission to consider two or more applications in the same licensing review and to consolidate two or more proceedings for hearing.

RULES OF PRACTICE: SEPARATE OPERATING LICENSE HEARING

Although used infrequently, the Commission's rules of practice also provide procedures for severing a proceeding dealing with two or more reactor units and for holding a separate operating license hearing on each reactor unit.

ATOMIC ENERGY ACT: SECTION 189

The requested amendment would, if adopted, have the effect of requiring a mandatory OL hearing in connection with the issuance of an OL for each nuclear power reactor. In this respect, the requested amendment is contrary to the clear intent of Congress which, in 1962, amended section 189a. of the Atomic Energy Act of 1954 to eliminate the requirement for mandatory hearings in OL proceedings and to permit the Commission, in any case in which a hearing was not requested, to issue an OL without a hearing.

OPERATING LICENSE HEARING: ISSUES

The OL hearing is limited to examining substantial changes or conditions which have occurred since the issuance of the construction permit and issues which were deferred for consideration at the OL stage of the proceeding.

OPERATING LICENSE HEARING: ISSUES

It is inappropriate to consider the issue of sufficient NRC personnel in a licensing proceeding, including a hearing on an OL. Issues relating to Commission personnel involve the internal organization and management of the agency which is subject to Congressional authorization, and for which the Commission, not a license applicant or an intervenor, has sole responsibility.

LICENSING PROCEEDINGS: FINANCIAL QUALIFICATIONS

The Commission has amended its regulations in 10 CFR Parts 2 and 50 to eliminate entirely requirements for financial qualifications review and findings for electric utilities that are applying for construction permits or operating licenses for production or utilization facilities.

DENIAL OF PETITION FOR RULEMAKING

As an enclosure to a letter dated September 23, 1981, Mr. Wells Eddleman of Durham, North Carolina, filed with the Commission petition for rulemaking PRM-2-11.

The Petition

The petitioner requested the following amendments to 10 CFR Part 2:

Add to 10 CFR section 2.101(a)* a new paragraph (4) as follows:

(4) For nuclear power reactors, no single operating license hearing shall authorize the operation of more than one power reactor. Instead, a separate operating license hearing including the ability to re-open or introduce any issue including safety, need for power, cost-effectiveness compared to alternatives to meet or eliminate the energy output proposed from the unit, evacuation planning, waste disposal, need for base load power, and other relevant issues, shall be held for each nuclear power reactor.

Add to 10 CFR 2, subpart D, a new section 2.408 as follows:

2.408 Separate operating license hearing required for each power reactor.

For each power reactor at a given site, whether of the same design as others built on that site, or not, a separate operating license hearing shall be held before any operating license for that reactor shall issue. Such separate hearing shall include a *de novo* examination and determination of all relevant safety issues, including unresolved safety problems whether so designated by the Commission or not, especially those difficulties which have occurred in operating plants or have been shown by re-analysis

*By post card dated February 26, 1982, the petitioner changed the cited paragraph to 10 CFR 2.102(d).

or experiment to be more serious risks than formerly believed. Such separate hearing shall also include a *de novo* determination of the need for power, if any, from the reactor, and a *de novo* determination of the cost-effectiveness of operating the reactor as compared to alternatives, taking fully into account for the reactor and unit, all fixed capital charges, fuel and operating and maintenance costs, including insurance and any tax consequences or benefits of not operating the reactor, or scrapping it or any of its associated systems. Alternatives considered shall include, but not be limited to, any of the following in any combinations: conservation, load management, increased energy efficiency, substitutions of alternative sources of energy and/or efficiency in end-uses of energy, co-generation, development of hydroelectric energy from existing dams, reducing energy waste, avoiding the need for energy use through any measures (including insulation, shading, reflective coatings and air spaces, thermal storage, use of the latent heat of the earth), use of wastes or biomass as fuels, competing sources of electricity including centralized or dispersed solar photovoltaic energy, wind power, more efficient motors or appliances, increased production from existing power plants with lower capital costs, increased electricity production from any other new or existing sources, geothermal energy, wave energy, ocean thermal energy, substitution of solar energy with or without thermal storage for end uses of electricity for heating and/or cooling, waste heat recovery, and microhydroelectric power production. Such separate hearing shall also consider and determine whether the Nuclear Regulatory Commission has in place adequate regulations and sufficient personnel to ensure the safe operation of the unit for its planned operating life, and shall consider the range of probable costs and uncertainties in costs of waste disposal and decommissioning of the unit, in making its cost-effectiveness determination for the nuclear unit compared to alternatives. In the event of conflict between this section and any other part of Chapter 10 of the Code of Federal Regulations or any other regulation, this subsection shall be controlling.

Basis For Request

As the basis for the request, the petitioner stated:

The time lag between in-service dates for individual reactors at multi-reactor nuclear plants has been increasing for many years, since long

before Three Mile Island 2's 1979 accident. For 4-unit plants, as much as 9 years or more may now be scheduled to elapse between the first and last unit coming on-line. For 2-unit plants, the second unit is often being scheduled for service 2 or 3 or more years after the first.

This time lag is partly induced by construction difficulties, partly by additional safety considerations, and considerably by reduced needs for new electrical generating plants, among other factors. However, these time lags provide the opportunity for, and indeed necessitate, more thorough NRC review of the issues involved in licensing a nuclear power unit, with respect to second, third, fourth and even later units of a single plant.

Request for Comments on Petition

A notice of filing of petition for rulemaking was published in the *Federal Register* on January 29, 1982 (47 FR 4310). The comment period expired March 30, 1982. The Commission received 22 letters of comment in response to the notice.

Nine commenters supported the petition primarily for the reasons set out by the petitioner. Responses to those comments are covered in the analysis of PRM-2-11 set out below.

In addition, one commenter observed that "the current practice of simultaneous licensing also has the unfortunate consequence of inhibiting public input to the licensing process" because once the hearing is over, it is difficult to reopen and citizens seeking to address various safety issues concerning successive units have a much higher legal standard to meet. Although litigation has to end sometime, this observation is not entirely accurate. In any case where a substantive safety issue is raised, the Commission would respond appropriately, either by reopening the proceeding or by other suitable means, such as, for example, postponing issuance of a full power license until the safety issue is resolved.

Another commenter offered the opinion that if one nuclear plant poses a threat due to accident, radiation releases, etc., it is obvious that two or more nuclear power plants at the same site pose twice the threat. While there may be proportionality between degree of risk and number of units, Commission requirements concerning the exposure risk to individuals residing in the vicinity of a nuclear reactor site are based on siting considerations which are independent of the number of units located at a particular site. Compliance with these requirements is a regularly litigated issue in Commission proceedings and the adoption of the petitioner's approach would not alter the validity nor expand the scope of such contentions.

Thirteen commenters opposed the petition primarily on the basis that the proposed amendments would inject unnecessary issues into the OL proceeding and

would lead to a burdensome and duplicative review in the OL proceeding of matters previously raised and resolved in the mandatory construction permit hearing required by section 189a. of the Atomic Energy Act of 1954, as amended.

One commenter suggested that if serious consideration were given to promulgation of a proposed rule, the petitioner should be required to provide a cost-effectiveness basis for the proposal. This suggestion is without merit. No Commission regulation requires a petitioner for rulemaking to submit cost information in connection with amendments of 10 CFR Part 2.

Another commenter expressed the opinion that the petition is frivolous and defective and should not have been published for public comment. The Administrative Procedure Act (5 U.S.C. 553(e) and 555(e)) and the Commission's rules of practice (10 CFR 2.800-2.809) provide that any interested person may petition to issue, amend, or repeal a rule and that prompt notice shall be given of the denial of a petition in whole or in part, together with a brief statement of the grounds for denial. The Commission's regulations also provide that upon acceptance for docketing, the Commission may publish a notice in the *Federal Register* informing interested persons that the petition has been docketed and requesting public comments. In view of the number of comments received, publication of notice of docketing of PRM 2-11 was not a useless act.

Petitioner's First Request

The petitioner's first request is that, for nuclear power reactors, no single OL hearing authorize the operation of more than one power reactor.

The petitioner has provided no compelling reasons — either from the standpoint of issues which must be considered or from the standpoint of participation by interested parties — why it is necessary to confine each OL hearing to a single reactor unit even though the reactor unit may be one of several similar units constructed on a multireactor site. The time lag between in-service dates for individual reactors at multireactor nuclear power plants is the ostensible basis for the petitioner's request. There has been no showing and there is no reason to believe that an amendment to the regulations requiring an exclusive hearing on each reactor unit will result in or enhance the consideration of any issues which could not also have been considered and considered equally well in a hearing on two or more units. Nor is there any reason to believe that the class of persons who could be included or excluded from participating in an OL hearing on two or more units constructed on a multiunit site would be different from the class of persons who could be included or excluded from participating in an OL hearing devoted exclusively to any single reactor unit constructed on the same multiunit site.

The petitioner also overlooks the fact that even though a consolidated hearing is held on several reactor units, a separate OL is issued for each reactor unit constructed on a multiunit site. Before an OL for a reactor unit is issued, the

Commission must make the requisite findings and determinations required by the regulations in effect at the time of license issuance. This procedure provides assurance that the reactor unit is licensed to operate in accordance with current safety requirements.

Under the provisions of the Atomic Energy Act of 1954, as amended, and the Commission's rules of practice, the Commission may consider two or more applications in the same licensing review. The Act neither provides for nor precludes the filing of an application for a facility license which covers more than one nuclear power reactor. Section 161 of the Act authorizes the Commission to hold such hearings as it may deem necessary or proper to assist it in exercising any authority provided in the Act and to consider in a single application and combine in a single license one or more of the activities for which a license is required by the Act. Under 10 CFR 50.31, an applicant may combine in one its several applications for different kinds of licenses under the regulations in 10 CFR Chapter 1. Pursuant to 10 CFR 2.716, on motion and for good cause shown or on its own initiative, the Commission may consolidate for hearing or for other purposes two or more proceedings, if it is found that such action will be conducive to the proper dispatch of business and to the ends of justice.

If a hearing is required by the Act or by 10 CFR Part 2, the Commission may submit these applications to an atomic safety and licensing board assigned to hear the case in a consolidated proceeding. In most instances, considerations of administrative efficiency dictate that this procedure be followed.

Although used infrequently, the Commission's rules of practice also provide procedures for severing a proceeding dealing with two or more reactor units and for holding a separate OL hearing on each reactor unit. For example, a party may move at any time to sever the proceedings for the second unit from the proceedings for the first unit and to stay the proceedings for the second unit until further order of an atomic safety and licensing board (*Illinois Power Company, et al.* (Clinton Power Station, Units 1 and 2), LBP-81-56, 14 NRC 1035 (1981)). In addition, the Commission has the authority in any OL proceeding, whether contested or uncontested, to determine on its own initiative that a hearing, including a separate hearing for each separate unit, is required in the public interest. Since the Commission's rules of practice authorize OL hearings on single reactor units, the amendments proposed by the petitioner are unnecessary.

Petitioner's Second Request

The petitioner's second request is that, for each power reactor at a given site, whether of the same design as others built on that site, or not, a separate operating license hearing be held before any operating license for that reactor shall issue.

The requested amendment would, if adopted, have the effect of requiring a mandatory OL hearing in connection with the issuance of an OL for each nuclear

power reactor. In this respect, the requested amendment is contrary to the clear intent of Congress, which, in 1962, amended section 189a. of the Atomic Energy Act of 1954 to eliminate the requirement for mandatory hearings in OL proceedings and to permit the Commission, in any case in which a hearing was not requested, to issue an OL without a hearing. Congress took this action because experience demonstrated that, absent bona fide intervention, a second hearing at the OL stage was unnecessary and burdensome.

Petitioner's Ancillary Requests

The petitioner also requested that the amendments include the following provisions:

- (1) Such separate hearing shall include a *de novo* examination and determination of all relevant safety issues.

The petitioner misconstrues the nature and purpose of the OL hearing which is not intended to duplicate the construction permit hearing or to provide *de novo* review. The OL hearing is limited instead to examining substantial changes or conditions which have occurred since the issuance of the construction permit and issues which were deferred for consideration at the OL stage of the proceeding. In any initial decision in a contested proceeding on an application for an OL for a production or utilization facility, the presiding officer is required by 10 CFR 2.760a, as amended (44 FR 67088, November 23, 1979) to make findings of fact and conclusions of law on the matters put into controversy by the parties to the proceeding and on matters which have been determined to be the issues in the proceeding by the Commission or the presiding officer. Matters not put into controversy by the parties will be examined and decided by the presiding officer only where he or she determines that a serious safety, environmental, or common defense and security matter exists.

- (2) Such separate hearing shall also include a *de novo* determination of the need for power, if any, from the reactor, and a *de novo* determination of the cost-effectiveness of operating the reactor as compared to alternatives.

On March 26, 1982, the Commission published in the *Federal Register* (47 FR 12940) a final rule amending 10 CFR Part 51, "Licensing and Regulatory Policy and Procedures for Environmental Protection." In 10 CFR 51.53, "Hearings — Operating licenses," new paragraph (c) states:

Presiding officers shall not admit contentions proffered by any party concerning need for power or alternative energy sources for the proposed plant in operating license hearings.

In the preamble to the final rule, the Commission stated:

. . . the purpose of these amendments is to avoid unnecessary consideration of issues that are not likely to tilt the cost-benefit balance by effectively eliminating need for power and alternative energy source issues from consideration at the operating license stage. In accordance with the Commission's NEPA responsibilities, the need for power and alternative energy sources are resolved in the construction permit proceeding. The Commission stated its tentative conclusion that while there is no diminution of the importance of these issues at the construction permit stage, the situation is such that at the time of the operating license proceeding the plant would be needed to either meet increased energy needs or replace older less economical generating capacity and that no viable alternatives to the completed nuclear plant are likely to exist which could tip the NEPA cost-benefit balance against issuance of the operating license. Past experience has shown this to be the case. * * * An exception to the rule would be made if, in a particular case, special circumstances are shown in accordance with 10 CFR 2.758 of the Commission's regulations.

- (3) Such separate hearing shall also consider and determine whether the Nuclear Regulatory Commission has in place adequate regulations and sufficient personnel to ensure the safe operation of the unit for its planned operating life.

The Commission considered the question of adequacy of its regulations when it restructured its rules of practice in 1972 and adopted 10 CFR 2.758, "*Consideration of Commission rules and regulations in adjudicatory proceedings*," which states in part:

(a) . . . any rule or regulation of the Commission, or any provision thereof, issued in its program for the licensing and regulation of production and utilization facilities . . . shall not be subject to attack by way of discovery, proof, argument, or other means in any adjudicatory proceeding involving initial licensing subject to this subpart. . . .

It is inappropriate to consider the issue of sufficient NRC personnel in a licensing proceeding, including a hearing on an OL. The Commission is committed to the effective use of its resources. Furthermore, issues relating to Commission personnel involve the internal organization and management of the agency which is subject to Congressional authorization, and for which the Commission, not a license applicant or an intervenor, has sole responsibility.

- (4) Such separate hearing shall consider the range of probable costs and uncertainties in costs of waste disposal and decommissioning of the unit, in making its cost-effectiveness determination for the nuclear unit compared to alternatives.

On March 31, 1982 (47 FR 13750), the Commission amended its regulations in 10 CFR Parts 2 and 50 to eliminate entirely requirements for financial qualifications review and findings for electric utilities that are applying for construction permits or operating licenses for production or utilization facilities.

In the preamble to the March 31, 1982, rule changes, the Commission also determined that any consideration of decommissioning funding should be eliminated from the present licensing process. Instead, the Commission plans to consider financial requirements relating to decommissioning in the context of an ongoing rulemaking proceeding to develop decommissioning regulations.

Denial

Based on the above considerations and careful consideration of the public comments received on petition for rulemaking PRM-2-11, the Commission hereby denies the petition for rulemaking filed by Wells Eddleman as an enclosure to a letter dated September 23, 1981.

For the Nuclear Regulatory
Commission

William J. Dircks
Executive Director for Operations

Dated at Bethesda, Maryland,
this 30th day of September, 1982.

LBP-82-119A was inadvertently omitted from the September 1982 issuances and not assigned an LBP number until December 1982. Therefore, this memorandum and order can be found at 16 NRC 2069.

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