

NUCLEAR REGULATORY COMMISSION ISSUANCES

OPINIONS AND DECISIONS OF THE NUCLEAR REGULATORY COMMISSION WITH SELECTED ORDERS

May 1, 1982—June 30, 1982

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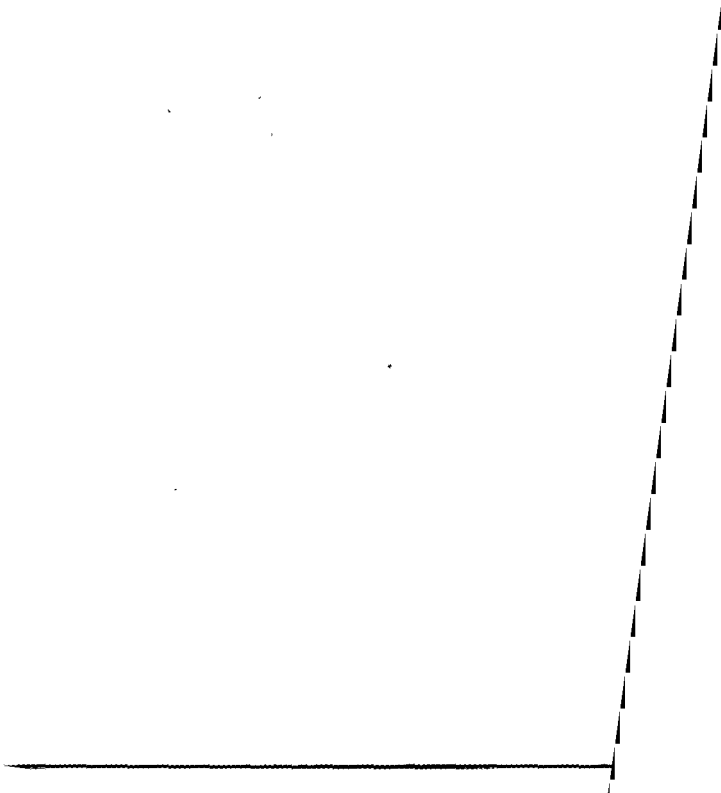
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Ivan W. Smith



PREFACE

This is Book II of the fifteenth volume of issuances (1095-1768) 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 May 1, 1982 to June 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.

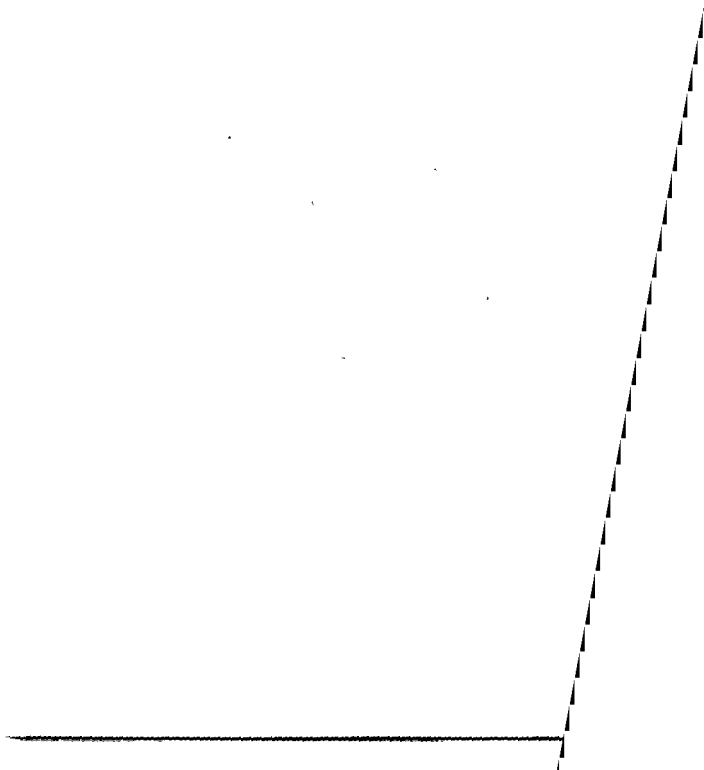
Beginning in 1969, the Atomic Energy Commission authorized Atomic Safety and Licensing Appeal Boards to exercise the authority and perform the review functions which would otherwise have been exercised and performed by the Commission in facility licensing proceedings. In 1972, that Commission created 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.

This volume is made up of pages from the six monthly issues of the Nuclear Regulatory Commission publication *Nuclear Regulatory Commission Issuances (NRCI)* for this period, arranged in chronological order. 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 Denial--DD, and Denial of Petition 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 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)

May 18, 1982

The Commission, by evenly divided vote, denies reconsideration of the Department of Energy's request for an exemption under 10 CFR 50.12 for authority to conduct site preparation activities for the Clinch River Breeder Reactor prior to the issuance of a Construction Permit. Commissioner Asselstine issues a separate statement explaining his reasons for not recusing himself from any Commission reconsideration of the exemption request.

RULES OF PRACTICE: COMMISSION RECONSIDERATION

A majority vote of the Commission is necessary to take the affirmative action of reconsideration of a prior Commission decision.

ORDER

By letter dated May 14, 1982, the Department of Energy requested the Commission to reconsider its earlier Order, dated March 16, 1982

(CLI-82-4), denying the Department of Energy's request for an exemption for site preparation activities under 10 CFR 50.12. On May 17, 1982, the Commission divided equally on whether to exercise its inherent power to reconsider that Order.¹ Because a majority of the Commission would be necessary to take the affirmative action of reconsideration, the Commission has effectively decided not to reconsider its earlier Order.²

It is so ORDERED.

For the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.
this 18th day of May, 1982.

**STATEMENT BY COMMISSIONER ASSELSTINE ON THE
DOE request for reconsideration of the Commission's denial of the request
to conduct site preparation activities pursuant to 10 CFR Section 50.12.**

There are three factors that govern my decision on the Department's request for reconsideration of the Commission's March 16 order denying the Department's request for permission to conduct site preparation activities pursuant to 10 CFR Section 50.12.

The first, and most significant in my view, is the appearance that affirmative action *on my part* on the Department's request for reconsideration would have for me and for this agency. It is impossible to ignore the fact that the Department's request for reconsideration comes on the heels of my confirmation by the Senate last Thursday, or that today's meeting to consider the Department's request comes literally hours after I have become a Member of the Commission. Moreover, it is impossible to ignore the last minute nature of the Department's request for reconsideration. That request was delivered to the Commission last Friday — just one working day before the expiration of the 60-day judicial review period. If this eleventh-hour request is to be acted upon by the Commission, it must be done on the most accelerated of schedules without an opportunity for comment by the other parties to the proceeding. Taken together, I believe that these factors would raise serious questions about the objectivity and

¹ Commissioner Gilinsky did not participate because he was on official travel.

² Commissioner Asselstine's separate statement is attached.

independence of a Commission decision *today* to grant the Department's request.

I believe this is a particular problem for me — and one not shared by my colleagues who were all participants in the Commission's original decision on the merits of the Department's Section 50.12 exemption request.

I am sensitive to the fact that an affirmative decision today on the Department's request for reconsideration would *not* constitute a decision on the merits of the Department's original exemption request. Indeed under the proposed order, a final decision on the merits would not come for some weeks. Nevertheless, I am convinced that the manner in which this request for reconsideration has been presented to the Commission, the timing of the request, and the importance of my position to the outcome of the request for reconsideration, would all raise serious concerns regarding my own independence and objectivity, and that of the Commission, should I vote today in favor of the Department's motion to reconsider.

The second factor for me is the significance of the issue that we are being asked to reconsider — the Department's exemption request. The Department's exemption request calls for extraordinary relief from the Commission's licensing requirements — relief that has been granted only infrequently in the past. The nature of this issue deserves the most careful and thoughtful consideration by the Commission. Even though a decision in favor of the Department's request for reconsideration today would only serve to keep the issue open for further Commission review, the very abbreviated consideration that can be given the request for reconsideration by me again presents at least the *appearance* of a hasty and ill-considered judgement.

The third factor for me is the extent to which a negative decision by the Commission today on the Department's request for reconsideration *precludes* the Department or other parties from seeking further Commission consideration of this matter. In that regard, it appears to me that the Department retains the option to submit a new request for permission to conduct site preparation activities under 10 CFR Section 50.12. I also believe that the Commission has the authority to consider a new request at that time, should it choose to do so. Commission decisions on how to proceed with consideration of a new petition could be reached in a much more careful and deliberative manner than can today's decision on the Department's request for reconsideration — at least for me.

For the foregoing reasons, I have decided to vote to deny the Department's request for reconsideration.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONER:

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)**

May 17, 1982

MEMORANDUM TO THE PARTIES

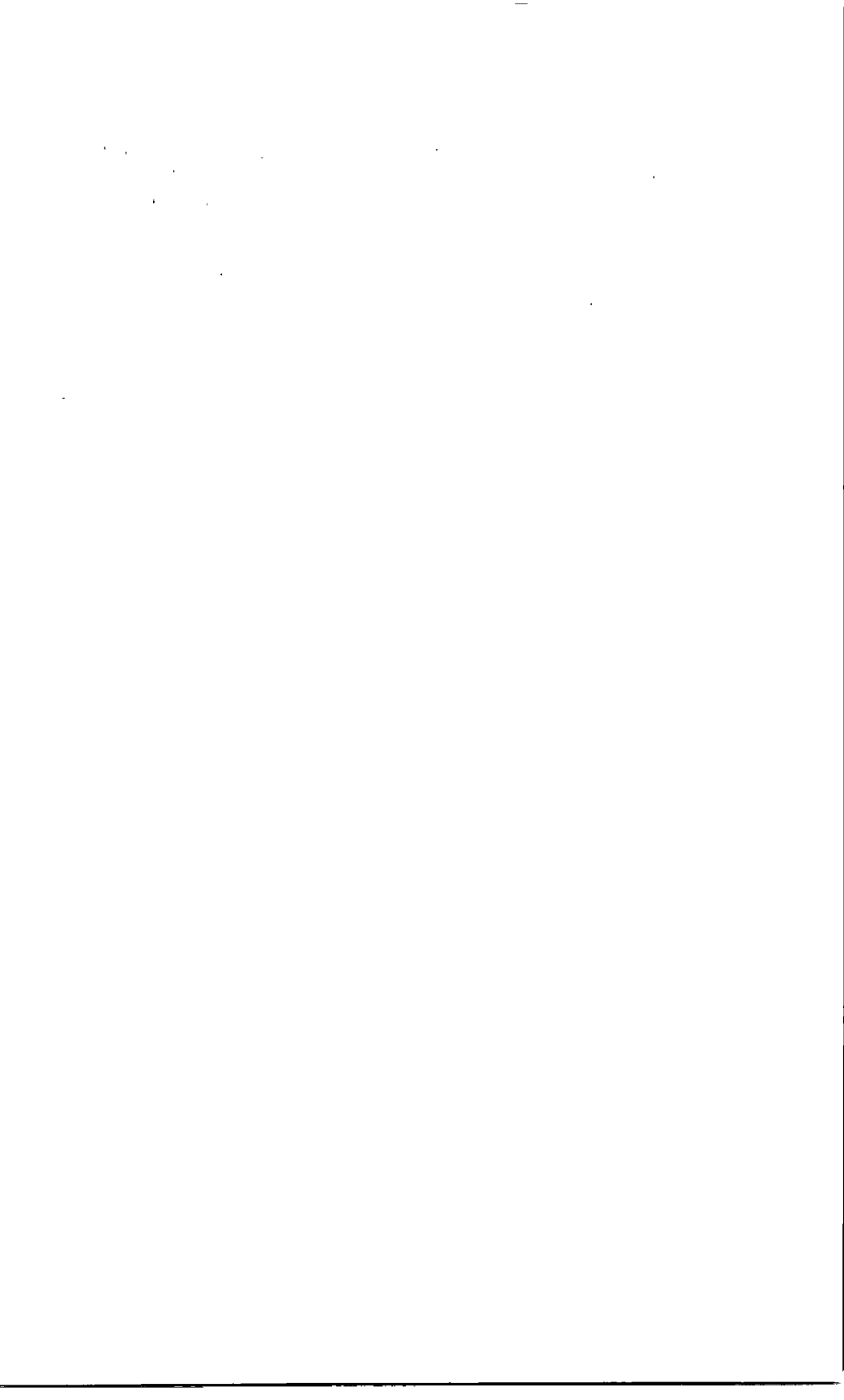
By motion filed May²17, 1982, Natural Resources Defense Council, Inc. and the Sierra Club moved that I recuse myself from any reconsideration of the Commission's March 16, 1982 Order denying the Department of Energy's exemption request.* As ground for the motion they assert that the process leading to the Department's May 14, 1982 reconsideration request and surrounding my nomination has created the impression of a foregone conclusion. Moreover, the bases for this underlying assertion — certain statements and actions by Chairman Palladino, alleged efforts by the Administration to find someone "to vote their way", the "mention" of the reconsideration issue by Administration officials to me prior to the confirmation process, and the speed with which the reconsideration process has proceeded — are not actions by myself or, indeed, actions for which I may be held accountable. All these matters are in the public record and have been fully disclosed. However, no conduct or statements on my part are

* At the outset I note that it is unclear whether I am requested to recuse myself from consideration *whether* to reconsider, or from consideration of the merits *upon* reconsideration. I have assumed it is the former and not the latter that is requested.

alleged to create the appearance of bias or the impression of a foregone conclusion. Indeed, movants concede that no promises were sought or given by me in connection with my nomination. Under these circumstances I do not believe that my participation in a decision whether to reconsider would create the appearance of bias or the appearance of a foregone conclusion.

JAMES K. ASSELSTINE

Dated at Washington, D.C.
the 17 day of May, 1982



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)

May 5, 1982

The Appeal Board summarily affirms, on an alternative ground, the Licensing Board's order (LBP-82-28, 15 NRC 759 (April 12, 1982)) denying an intervenor's request to halt further construction of the Midland facility pending resolution of the potential effects on the plant of an electromagnetic pulse (EMP) ostensibly generated from the high altitude detonation of a nuclear weapon.

LICENSING BOARDS: JURISDICTION

A licensing board for an operating license proceeding 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 Co. of New York* (Indian Point, Units 1, 2 & 3), ALAB-319, 3 NRC 188, 190 (1976).

LICENSING BOARDS: JURISDICTION

A licensing board for an operating license proceeding does not have general jurisdiction over the already authorized ongoing construction of the plant for which an operating license application is pending, and it cannot suspend the previously issued construction permit.

RULES OF PRACTICE: SHOW CAUSE PROCEEDING

An intervenor in an operating license proceeding who seeks to halt already authorized plant construction should file a petition under 10 CFR 2.206 with the appropriate Commission official.

MEMORANDUM AND ORDER

Intervenor Mr. Wendell H. Marshall, by letter dated April 21, 1982, "appeals" a Licensing Board memorandum and order denying his request to halt further construction of the Midland facility. See LBP-82-28, 15 NRC 759 (1982). Intervenor argues that construction should stop pending resolution of the potential effects on Midland of an electromagnetic pulse (EMP) ostensibly generated from the high altitude detonation of a nuclear weapon. The Licensing Board found that "this matter is not relevant to the soils matters which are presently before this Board."¹ and, beyond that, consideration of EMP in this operating license proceeding is expressly barred by a Commission regulation. *Id.* at 760.²

1. The Licensing Board memorandum explains why, in its view, the *substance* of the EMP issue is beyond the scope of this licensing proceeding. We think the better answer, however, is that intervenor has requested a *remedy* that the Board is not authorized to grant — *i.e.*, stopping the construction already under way at Midland and effectively suspending the previously issued construction permit, pending resolution of the EMP issue.³

A licensing board for an operating license proceeding, such as the one involved here, is limited to resolving matters that are raised therein as

¹ This is a combined operating license application and construction permit modification proceeding. The latter portion is explicitly confined to soil settlement issues. See Order Modifying Construction Permits (December 6, 1979) and Notice of Hearing, 45 *Fed. Reg.* 18214 (March 20, 1980), *as amended*, 45 *Fed. Reg.* 35949 (May 28, 1980). It was consolidated with the operating license application, which also involves numerous soil settlement issues, in order to "avoid repetitive litigation of factual questions." See Prehearing Conference Order (October 24, 1980), p. 13.

² See 10 CFR 50.13, which provides:

An applicant for a license to construct and operate a production or utilization facility, or for an amendment to such license, is not required to provide for design features or other measures for the specific purpose of protection against the effects of (a) attacks and destructive acts, including sabotage, directed against the facility by an enemy of the United States, whether a foreign government or other person, or (b) use or deployment of weapons incident to U.S. defense activities.

³ See, *e.g.*, Marshall letters to the Licensing Board dated December 16, 1981; March 22, 1982; March 25, 1982. Intervenor does not purport to seek admission of a contention relating to the EMP issue.

legitimate contentions by the parties or by the board *sua sponte*. 10 CFR 2.760a; *Consolidated Edison Co. of New York* (Indian Point, Units 1, 2 & 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 ongoing construction of the plant for which an operating license application is pending, and it cannot suspend such a previously issued permit.⁴ Thus, the Board below was powerless to grant the relief that intervenor requested.⁵

This does not mean that intervenor is totally without recourse in his attempt to halt construction pending resolution of the EMP issue. The Commission's Rules of Practice specifically provide (10 CFR 2.206(a)):

Any person may file a request for the Director of Nuclear Reactor Regulation, Director of Nuclear Material Safety and Safeguards, Director, Office of Inspection and Enforcement, as appropriate, to institute a proceeding pursuant to §2.202 to modify, suspend or revoke a license, or for such other action as may be proper. Such a request shall be addressed to the Director of Nuclear Reactor Regulation, Director of Nuclear Material Safety and Safeguards, Director, Office of Inspection and Enforcement, as appropriate, and shall be filed either: (1) By delivery to the Public Document Room at 1717 H Street N.W., Washington, D.C., or (2) by mail or telegram addressed to the Director of Nuclear Reactor Regulation, Director of Nuclear Material Safety and Safeguards, Director, Office of Inspection and Enforcement, as appropriate, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. The requests shall specify the action requested and set forth the facts that constitute the basis for the request.

Thus, despite the fact that his request is beyond the scope of this adjudication, intervenor may pursue the matter by filing an appropriate petition

⁴ The Commission or an appeal board, of course, has the power to suspend or stay the issuance of a construction permit in conjunction with its review of a licensing board decision authorizing that permit, or upon court remand of such a decision. See, e.g., *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), CLI-77-27, 6 NRC 715 (1977); *id.*, ALAB-366, 5 NRC 39, *aff'd with modifications*, CLI-77-8, 5 NRC 503 (1977); *Union Electric Co.* (Callaway Plant, Units 1 and 2), ALAB-352, 4 NRC 371 (1976).

⁵ The fact that this proceeding involves not only an operating license application but also a proposed amendment to the Midland construction permit does not enlarge the Licensing Board's remedial powers vis-a-vis that permit so as to encompass intervenor's request here. As we explain at note 1, *supra*, the permit modification portion of the proceeding is limited to soil settlement issues.

under 10 CFR 2.206 with the Director of Nuclear Reactor Regulation (NRR).⁶

2. Because intervenor's forum for seeking a halt to construction clearly lies elsewhere, we dispense with briefing and summarily affirm the Licensing Board's ruling on this alternative ground. As seen from the discussion above, the peculiar circumstances of intervenor's appeal are such that briefing and prolonged consideration of the matter would not have contributed to its disposition.⁷ Indeed, we believe that, because our course is necessarily so clear, it is the best interest of all the parties (especially this *pro se* intervenor) to avoid further unwarranted and unproductive expenditure of his resources.

The Licensing Board's April 12, 1982, memorandum and order (LBP-82-28) is *affirmed on other grounds*.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the Appeal Board

⁶ We decline to speculate on how the Director might rule on such a petition. We simply hold that intervenor has chosen the wrong forum — *i.e.*, this adjudication — in which to seek a halt to construction.

We do note, though, that intervenor has already informally contacted the staff about the effect of EMP on Midland. In reply, he received a letter (dated November 24, 1981) from the NRC's Executive Director for Operations. This does not, however, preclude intervenor from invoking the Commission's formal procedures for dealing with such matters, embodied in 10 CFR 2.206, especially if he has more information to provide.

⁷ We are mindful of intervenor's procedural rights and sensitive to the appearance of unfairness in deciding the matter at hand without hearing further from the parties. But the papers before the Licensing Board were extremely brief and none even mentioned 10 CFR 2.206. See Marshall letters, note 3, *supra*, and the December 28, 1981, and January 25, 1982, letter-responses of the applicant and NRC staff, respectively. In the circumstances, it is unlikely that full briefing before us would have yielded any additional arguments or information.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Christine N. Kohl, Chairman
Dr. John H. Buck
Gary J. Edles

In the Matter of

Docket Nos. 50-440 OL
50-441 OL

CLEVELAND ELECTRIC
ILLUMINATING COMPANY, et al.
(Perry Nuclear Power Plant,
Units 1 and 2)

May 17, 1982

The Appeal Board denies the applicants' motion, pursuant to directed certification under 10 CFR 2.718(i) and 2.785(b)(1), for interlocutory review of the Licensing Board's order (LBP-82-15, 15 NRC 555 (1982)) restating and admitting an intervenor's hydrogen control contention in this operating license proceeding.

RULES OF PRACTICE: INTERLOCUTORY APPEALS (DIRECTED CERTIFICATION)

Review of an interlocutory licensing board ruling via directed certification is discretionary and granted infrequently. A party invoking review by this means must demonstrate that the 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), and cases cited.

RULES OF PRACTICE: INTERLOCUTORY APPEALS (DIRECTED CERTIFICATION)

A licensing board ruling may conflict with Commission case law, policy, or regulations or otherwise may be in error, but, unless it is shown that the error fundamentally alters the very shape of the ongoing adjudication, appellate review must await the issuance of a "final" licensing board decision.

RULES OF PRACTICE: INTERLOCUTORY APPEALS (DIRECTED CERTIFICATION)

The added delay and expense occasioned by the admission of a contention — even if erroneous — does not in and of itself warrant interlocutory review.

RULES OF PRACTICE: LITIGABILITY OF ISSUES

Notwithstanding certain ongoing rulemakings and the decision in *Potomac Electric Power Co.* (Douglas Point Nuclear Generating Station, Units 1 and 2), ALAB-218, 8 AEC 79, 85 (1974), Commission guidance in *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 1), CLI-80-16, 11 NRC 674, 675 (1980) [TMI-1 Restart], permits the litigation of hydrogen control in individual licensing proceedings where there is a credible loss-of-coolant accident scenario for the generation of hydrogen. See *Duke Power Co.* (William B. McGuire Nuclear Station, Units 1 and 2), ALAB-669, 15 NRC 453, 464 (1982).

Messrs. Jay E. Silberg and Robert L. Willmore, Washington, D.C.,
for the applicants, The Cleveland Electric Illuminating
Company, *et al.*

Mr. Daniel D. Wilt, Brecksville, Ohio, for the intervenor,
Sunflower Alliance, Inc., *et al.*

Ms. Susan L. Hiatt, Mentor, Ohio, for the intervenor Ohio Citizens
for Responsible Energy.

Mr. James H. Thessin for the Nuclear Regulatory Commission
staff.

MEMORANDUM AND ORDER

Applicants, the Cleveland Electric Illuminating Company, *et al.*, have requested our immediate interlocutory review, pursuant to directed certification, of a portion of a Licensing Board memorandum and order issued on March 3, 1982, in this operating license proceeding. See 10 CFR 2.718(i), 2.785(b)(1). The challenged order restates and admits a contention proffered by intervenors Sunflower Alliance, Inc., *et al.*, that concerns hydrogen control at the Perry facility. LBP-82-15, 15 NRC 555 (1982). Sunflower and another intervenor, Ohio Citizens for Responsible Energy (OCRE), oppose the request.¹ The NRC staff, while alleging some errors in the Licensing Board's ruling, also opposes a grant of directed certification. Because applicants have failed to show that the Board's order warrants our immediate review, we deny the motion.

I.

Sunflower originally submitted the following contention:

Petitioners allege that there is insufficient documentation of the ability of the containment structures of [Perry] to safely inhibit a hydrogen explosion of the magnitude and type which occurred at the Three Mile Island Unit 2 near Harrisburg, Pennsylvania and of which the Commission is aware. Petitioners further allege that licensing of the subject facilities to emit certain minimal amounts of radiation is inadequate to ensure the health and safety of persons, animals and vegetation near the plant, including your petitioners herein.

Sunflower Petition for Leave to Intervene (March 5, 1981), p. 6.² The Licensing Board denied its admission, relying on the Commission's decision in *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 1), CL1-80-16, 11 NRC 674 (1980) ["*TMI-1 Restart*"]. LBP-81-24, 14 NRC 175, 207-208 (1981). In *TMI-1 Restart*, the Commission essentially determined that hydrogen control could be litigated in that proceeding "if it is determined that there is a credible loss-of-coolant accident [LOCA] scenario entailing hydrogen generation, hydrogen combustion, containment breach or leaking, and offsite radiation doses in excess of [10 CFR] Part

¹ We commend OCRE for the well-written, thorough reply filed by its apparently *pro se* representative.

² OCRE's Contention 5 was similar. OCRE's Supplement to its Petition for Leave to Intervene (April 30, 1981), p. 2.

100 guideline values." 11 NRC at 675.³ While finding that its course was "somewhat unclear" because of other, more recent Commission decisions, the Board below concluded: "Were intervenors to propose a specific accident scenario, we might adopt a broad view of what is 'credible,' in light of the accident at TMI and this ambiguous legal background, but without such a scenario we are now powerless to admit this particular contention." 14 NRC at 208. The Board suggested that intervenors might thus be able to raise a hydrogen control contention at a later time, but it warned that they would have to satisfy the criteria of 10 CFR 2.714(a)(1) governing late-filed contentions. *Ibid.*

More than five months later, Sunflower moved to resubmit its hydrogen control contention. It continued to allege that "there is insufficient documentation of the ability of the containment structures of [Perry] to safely inhibit a hydrogen explosion of the magnitude and type which occurred at Three Mile Island Unit 2." Sunflower Motion to Resubmit Contention 7 (January 8, 1982), p. 1. In an effort to comply with the *TMI-1 Restart* requirement of a credible LOCA, Sunflower offered the following scenario:

1. a pipe break in the reactor coolant pressure boundary causes a LOCA, as defined by 10 CFR 50.46(c)(1).
2. failure of the ECCS [emergency core cooling system] 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 Some brief background on the role of hydrogen control issues in NRC licensing proceedings is necessary at this point.

The Commission, in 10 CFR 50.44, set the standards for hydrogen control that each facility must meet before receiving a license. These standards are based on certain assumptions concerning the rate and amount of hydrogen produced from the chemical reaction between the zircaloy cladding of the fuel rods and the water (steam) that escapes from the primary coolant system during a LOCA. The standards embodied in 10 CFR 50.44 cannot be challenged directly in a licensing proceeding unless the Commission expressly authorizes it. 10 CFR 2.758. The Commission in *TMI-1 Restart* noted that hydrogen was generated at the TMI-2 accident in amounts "far in excess of the hydrogen generation design basis assumptions of 10 CFR 50.44," but it declined permission for a direct challenge to 10 CFR 50.44. 11 NRC at 675. It did, however, authorize litigation of hydrogen control, to the extent described in the text above, pursuant to 10 CFR Part 100. *Ibid.* (That regulation concerns the offsite doses of radiation that are assumed to result from a containment breach.) The Commission also noted its intent to pursue the matter of hydrogen control in a "broad rulemaking." *Ibid.* Several rulemakings, in fact, are now under way. See 45 *Fed. Reg.* 65466 (October 2, 1980); 46 *Fed. Reg.* 58484 (December 2, 1981); 46 *Fed. Reg.* 62281 (December 23, 1981).

For additional discussion of hydrogen generation and control and the accident at TMI-2, see *Duke Power Co.* (William B. McGuire Nuclear Station, Units 1 and 2), ALAB-669, 15 NRC 453, 459-460 & n.12, 464, 472 (1982).

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 of fission products 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.

Id. at p. 3. Sunflower acknowledged that “[t]his scenario is admittedly lacking in minute details,” but it did focus some concern on the possibility that operator error might result in a delay of 15 minutes to one hour in the initiation of the hydrogen control system following a LOCA. *Id.* at pp. 3, 4. Sunflower also addressed the criteria for acceptance of late-filed contentions (10 CFR 2.714(a)(1)), asserting that the facts weighed in favor of admission of its contention. *Id.* at pp. 4-6. Applicants and the staff, as they had in the first instance, opposed the admission of this version of Sunflower’s hydrogen control contention.

In ruling on the motion, the Licensing Board referred to a recent NRC notice of proposed rulemaking, in which the Commission proposes amendments to its existing hydrogen control regulations that would require plants with Mark III containments — like Perry — to be able to accommodate substantially more hydrogen than the regulations now require. 15 NRC at 560-561. See 46 *Fed. Reg.* 62281 (December 23, 1981). See also note 3, *supra*. The Board noted, in addition, the Commission’s “Proposed Policy Statement on Safety Goals for Nuclear Power Plants,” 47 *Fed. Reg.* 7023 (February 17, 1982). It found “these recent Commission utterances, proposed and tentative though they may be, to be inconsistent with the TMI decision on which we relied.” 15 NRC at 561: The Board characterized this as an “apparent change in Commission attitudes,” providing “more favorable leanings toward the hydrogen contention.” *Ibid.* Believing it “more prudent” to assume that Commission requirements for hydrogen control will be more stringent by the time Perry begins operation, and acting pursuant to its “general powers” (10 CFR 2.718), the Licensing Board admitted Sunflower’s contention. *Ibid.*

The Board also concluded that Sunflower had supplied both specificity to the contention as a whole⁴ and "specific [accident] scenarios which might meet the Commission's previous objections." *Id.* at 561-562. In view of the Board's latter assessment, it restated Sunflower's contention, "intentionally exclud[ing] from [it] any reference to the mechanism by which hydrogen can be generated." *Id.* at 563. The contention, as admitted, now states:

Applicant has not demonstrated that the manual operation of two recombiners in each of the Perry units is adequate to assure that large amounts of hydrogen can be safely accommodated without a rupture of the containment and a release of substantial quantities of radioactivity into the environment.

Ibid. The Licensing Board also weighed the factors governing the submission of late-filed contentions, 10 CFR 2.714(a)(1), and determined that, on balance, they favored admission of the contention. *Id.* at 562-563. In making this determination, the Board stressed the "importance" of the hydrogen control issue and the fact that it does not expect the consideration of this issue to cause any delay in the ultimate decision. *Id.* at 562-563.

Applicants, by their motion for directed certification, seek to challenge the admission of Sunflower's hydrogen control contention on both substantive and procedural (*i.e.*, timeliness) grounds.

II.

Review of an interlocutory licensing board ruling via directed certification is discretionary and granted infrequently. A party invoking review by this means must demonstrate that the 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), and cases cited. Applicants here rely on only the latter test.

Applicants make essentially three points in arguing that the admission of Sunflower's late-filed hydrogen control contention will "undermine the

⁴ For example, the Board pointed out that Sunflower's motion in support of its contention referred to several sections of the Final Safety Analysis Report in challenging the adequacy of the hydrogen control system (two recombiners per unit) at Perry. 15 NRC at 562-563.

efficacy and purpose of this entire license proceeding." Applicants' Motion for Directed Certification (March 23, 1982); p. 2. First,

[t]he Licensing Board has embarked upon a course patently inconsistent with NRC regulations and established Commission and Appeal Board case law. It has taken it upon itself to adjudicate the continued validity of a NRC regulation, and has rejected binding authority on the most tenuous of grounds. This disregard of well settled rules and legal principles affects the license proceeding in the most pervasive and fundamental sense by placing into doubt *as to every issue* the significance of relevant NRC regulations and controlling authority.

Id. at p. 9 (emphasis in original). As to the substance of the contention, applicants contend that the Licensing Board misunderstood the relationship of this adjudicatory proceeding to the rulemaking now under way concerning hydrogen control at plants with Mark III containments. They argue that our decisions in *Potomac Electric Power Co.* (Douglas Point Nuclear Generating Station, Units 1 and 2), ALAB-218, 8 AEC 79, 85 (1974), and *Sacramento Municipal Utility District* (Rancho Seco Nuclear Generating Station), ALAB-655, 14 NRC 799, 816-817 (1981), require the Board to forego consideration of any hydrogen control issue because it is the subject of a pending rulemaking.⁵ Insofar as Sunflower's contention was late-filed, applicants contend that the Board applied the wrong legal standard and "display[ed] a fundamental misunderstanding of applicable law." *Id.* at p. 21.

Second, applicants argue that litigating hydrogen control here will result in unwarranted delay, increased expense to the parties, and wasteful duplication of effort. *Id.* at p. 12. They add that this is a complex issue of generic significance, "not capable of 'simple resolution' in a license proceeding." *Id.* at p. 11.

Third, if hydrogen control can be litigated despite the pending rulemaking, applicants argue that *TMI-1 Restart* requires a credible LOCA scenario in order to determine the quantity and rate of hydrogen generation. To dispense with this prerequisite, as the Licensing Board did, effectively suspends the Commission's existing hydrogen control standard

⁵ Applicants believe that the Licensing Board's asserted failure to follow this case law stems from "a basic disagreement . . . with the holding, and philosophy of *Douglas Point*." Applicants' Motion, p. 14. Evidence of this is allegedly found in certain other Board rulings not before us for review. In applicants' view, the Licensing Board's "disagreement" with *Douglas Point* translates into a "reluctance to follow an explicit Appeal Board directive," a practice we disapproved in *South Carolina Electric and Gas Co.* (Virgil C. Summer Nuclear Station, Unit 1), ALAB-663, 14 NRC 1140, 1150 (1981). *Id.* at pp. 14-15.

and exposes it to unbounded challenges. Applicants thus characterize the Board's ruling as policy making — a function properly reserved for the Commission. *Id.* at pp. 15-20.

We find applicants' first two arguments unconvincing. As we explain below, they fail to explain *how* the Licensing Board's admission of Sunflower's contention — even if erroneous — “affects the basic structure of the proceeding in a pervasive or unusual manner” so as to warrant review *now*. *Salem, supra*, 11 NRC at 536. As to their third argument, we believe they have misconstrued the Licensing Board's intent.

A.

Applicants argue that the Licensing Board's ruling is “patently inconsistent with NRC regulations and established Commission and Appeal Board case law.” Applicants' Motion, p. 9. We are unable to agree.

Without passing judgment on the correctness of the Board's ruling, we see no obvious conflict with our decision in *Douglas Point, supra*.⁶ In that case, we held that “licensing boards should not accept in individual license proceedings contentions which are (or are about to become) the subject of general rulemaking by the Commission.” 8 AEC at 85. The very point of *TMI-1 Restart*, however, is that hydrogen control *can* be litigated in an individual licensing proceeding, under certain conditions, notwithstanding the then-forthcoming rulemakings on the issue. See p. 1114, *infra*.⁷ The subsequent notice of proposed rulemaking for hydrogen control at Mark III plants, which refers to interim requirements imposed in “individual licensing proceedings,” would appear to confirm this. See 46 *Fed. Reg.* at 62282.⁸

⁶ *A fortiori* we reject the applicants' characterization of the Licensing Board's action as a “reluctance to follow an explicit Appeal Board directive.” See note 5, *supra*. The portion of our decision in *Summer, supra*, upon which applicants rely in making this argument, concerned a Licensing Board's professed reluctance to comply with an Appeal Board order that was directed specifically to that Board and addressed to the particular matters there at hand. No such order is involved here. See also *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-468, 7 NRC 465 (1978).

⁷ The Commission issued *TMI-1 Restart* long after *Douglas Point*. Consequently, we believe it is safe to assume that, had the Commission intended complete deferral of hydrogen control issues to the future rulemakings pursuant to *Douglas Point*, it would have said so.

⁸ Our opinion in *Rancho Seco, supra*, does not suggest otherwise. That case involved a special nonlicensing proceeding convened to consider the plant's ability to respond safely to feedwater transients. Although the Licensing Board investigated hydrogen control, in our *sua sponte* review of the case we refused to reach the question whether hydrogen control was even

(CONTINUED)

Similarly, we cannot find that the Licensing Board's opinion is seriously at odds with the regulations governing admission of late-filed contentions. Though we may not be in complete agreement with its ruling on each discrete factor,⁹ the Board appears to have reached a judgment that is not so "patently inconsistent" with prevailing law as to merit our attention now.

Our conclusion here comports well with those reached in similar cases. See, e.g., *Pennsylvania Power & Light Co.* (Susquehanna Steam Electric Station, Units 1 and 2), ALAB-641, 13 NRC 550, 552 (1981); *Houston Lighting & Power Co.* (South Texas Project, Units 1 and 2), ALAB-637, 13 NRC 367, 372-373 (1981); *Salem, supra*, 11 NRC at 536; *Puget Sound Power and Light Co.* (Skagit Nuclear Power Project, Units 1 and 2), ALAB-572, 10 NRC 693, 695-696 (1979). In each instance, a party sought directed certification of a ruling that was assertedly in conflict with Commission case law, policy, or regulations and that effectively expanded the scope or length of a licensing proceeding. We denied directed certification, however, finding no pervasive or unusual effect on the basic structure of each proceeding. In sum, a licensing board may well be in error but, unless it is shown that the error fundamentally alters the very shape of the ongoing adjudication, appellate review must await the issuance of a "final" licensing board decision.¹⁰

B.

Applicants' second argument — that litigation of Sunflower's hydrogen control contention will lead to delay and increased expense — is likewise

properly raised in a proceeding of such limited scope. Instead, we simply left "the matter of hydrogen control at Rancho Seco to the Commission's consideration in the ongoing rulemaking and refrain[ed] from any explicit comment or judgment on this portion of the Board's decision." 14 NRC at 816-817.

⁹ For example, we doubt — but do not decide — the correctness of the Board's "good cause" finding under 10 CFR 2.714(a)(1)(i). The Board states: "[w]hether or not a party has shown good cause for late filing relates in part to the safety or environmental importance of the issue it has raised." 15 NRC at 562-563. While it may be appropriate to consider the importance of a contention under one of the other four criteria of section 2.714(a)(1), we have stressed that "whether there is 'good cause' for a late filing depends wholly upon the substantiality of the reasons assigned for not having filed at an earlier date." *South Carolina Electric and Gas Co.* (Virgil C. Summer Nuclear Station, Unit 1), ALAB-642, 13 NRC 881, 887 n.5 (1981) (emphasis in original), *aff'd sub nom. Fairfield United Action v. NRC*, No. 81-2042 (D.C. Cir., April 28, 1982).

¹⁰ Applicants do not explain their assertion that the Licensing Board's ruling has "plac[ed] into doubt as to every issue the significance of relevant NRC regulations and controlling authority." See Applicants' Motion, p. 9 (emphasis in original). Moreover, nothing in the Board's opinion supports such a sweeping claim.

unpersuasive. See Applicants' Motion, p. 12. We have noted, in similar circumstances, the obvious fact that "once the hearing is held[,] the time and money expended in the trial of an issue cannot be recouped by any appellate action." *Susquehanna, supra*, 13 NRC at 552. The same is true, however, any time a contention is admitted over a party's objections and the hearing proceeds. The added delay and expense occasioned by the admission of Sunflower's contention — even if erroneous — thus does not alone distinguish this case so as to warrant interlocutory review. See *ibid.*

C.

Finally, applicants argue that, even if hydrogen control can be litigated in this proceeding, the Licensing Board erred in dispensing with the requirement of a credible LOCA scenario, as clearly mandated by *TMI-1 Restart*. See 11 NRC at 675.

We agree with applicants that the Commission's *TMI-1 Restart* ruling requires a credible LOCA scenario for the generation of hydrogen and that this decision pertains to other licensing proceedings, such as that here. *Duke Power Co.* (William B. McGuire Nuclear Station, Units 1 and 2), ALAB-669, 15 NRC 453, 464 (1982).¹¹ We do not read the Licensing Board's opinion, however, as necessarily at odds with *TMI-1 Restart*. Admittedly, the Board's opinion is somewhat confusing, but we do not believe it intended to exclude entirely the very premise for the legitimate litigation of a hydrogen control contention.¹² The Board simply sees "little purpose" in expending hearing time on the specifics of a possible cause of hydrogen generation. 15 NRC at 563. As it states, "Sunflower has suggested several mechanisms, any one of which would do." *Ibid.* Instead, the Board has chosen to explore the matter of hydrogen *control*, rather than hydrogen *generation*. In so doing, it has assumed the existence of a credible accident. While we express no judgment on the propriety of such an assumption, we point out that this is not the same as disregarding the *TMI-1 Restart* requirement of a credible LOCA scenario.

As noted, the Board did not specify the particular type of "credible" accident it has assumed. Different types of accidents, however, result in different rates and quantities of hydrogen generation. A given hydrogen-generating mechanism thus has obvious relevance to the efficacy of a

¹¹ Sunflower also agrees. See Sunflower Response to Applicant's Motion for Directed Certification (April 15, 1982), p. 6.

¹² We note that the Board issued its opinion here several weeks before we rendered our own decision in *McGuire, supra*.

hydrogen control system. In order to litigate meaningfully the adequacy of such a system, a particular accident or accidents should be specified. The hydrogen control contention admitted and restated by the Licensing Board here must therefore be construed in the context in which it was raised — *i.e.*, Sunflower's Motion to Resubmit Contention 7. It is clear from Sunflower's motion and contention that it remains concerned with "a hydrogen explosion of the magnitude and type which occurred at Three Mile Island Unit 2." Sunflower Motion, p. 1. While Sunflower asserts that "other accident sequences (e.g., ATWS) can also lead to fuel clad melting and subsequent hydrogen generation," it recognizes — albeit reluctantly — that it must be bound by *TMI-1 Restart* and one LOCA scenario. *Id.* at pp. 2-3. That that scenario is a "TMI-2 type" LOCA is further supported by Sunflower's concern with "the possibility of operator error," which played a key role in the TMI-2 accident. *Id.* at p. 4. See *TMI-1 Restart*, *supra*, 11 NRC at 675, 676.

We assume that, although the Licensing Board did not specify the particular credible accident that, in its view, provides the premise for Sunflower's reframed contention, it did not intend to expand improperly Sunflower's contention beyond its own self-imposed limitations. Otherwise, the Board's action would be tantamount to the raising of a new issue *sua sponte* — action that is now subject to immediate Commission oversight and that can be invoked only by observing special procedures. See *Houston Lighting and Power Co.* (South Texas Project Units 1 and 2), LBP-81-54, 14 NRC 918, 922-923 & n.4 (1981). The Board does not purport to pursue a variety of accident sequences *sua sponte*, and we are not willing to infer that the Board intended to act at odds with a Commission directive. See *Salem*, *supra*, 11 NRC at 537-538. We therefore believe that a fair reading of the Licensing Board's opinion requires litigation of Sunflower's restated hydrogen control contention, as construed in the context in which it was raised: *i.e.*, the contention is predicated on the assumption of a TMI-2 type accident.¹³ Given that the Board's opinion, in our view, is susceptible to such an interpretation, we see no direct conflict

¹³ It is the Licensing Board's function to determine what a TMI-2 type accident is, insofar as the Perry facility is concerned. We note that in *McGuire*, *supra*, 15 NRC at 465 n.22, that term was applied to an accident sequence involving a small-break LOCA (in the one-half to two-inch diameter range) similar, but not identical, to the one that occurred at TMI-2 in March 1979. See also *id.* at 467-468. The McGuire facility, like TMI-2, however, is a pressurized water reactor, while Perry is a boiling water reactor. Because of that fundamental difference in reactor design, we believe it is reasonable to infer that the consequences of a TMI-2 type accident at Perry, in terms of the rate and quantity of hydrogen generation, would be significantly different as well. The litigation of Sunflower's contention will presumably reflect that.

with *TMI-1 Restart* or any other agency law so as to warrant review now via a grant of directed certification.¹⁴

III.

Applicants' concern about the admission of Sunflower's hydrogen control contention — and, consequently, what we say here — may well be for naught. That contention focuses specifically on the adequacy of Perry's recombiners. But according to a recent letter from applicants to the NRC's Division of Licensing, Perry's hydrogen mitigation and control system apparently will now rely principally on a distributed igniter system in the containment. Letter from Dalwyn R. Davidson, Vice President, System Engineering and Construction, The Cleveland Electric Illuminating Company, to A. Schwencer, Chief, Licensing Branch No. 2, Division of Licensing, NRC (March 22, 1982), Attachment (Response to Question 480.40).¹⁵ Therefore, before proceeding further with Sunflower's contention, the Licensing Board should determine applicants' present plans in this regard and the effect this will have on the contention here at issue.

Applicants' motion for directed certification of the Licensing Board's admission of Sunflower's hydrogen control contention (LBP-82-15) is *denied*.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the Appeal Board

¹⁴ We stress that, in denying applicants' motion for directed certification, we imply no opinion on either (1) whether the Licensing Board could properly assume the existence of any credible accident (see p. 17, *supra*), or (2) whether a TMI-2 type accident at Perry is credible.

¹⁵ This matter was brought to our attention by our own Appeal Panel staff. We, as well as the Licensing Board, *should* have learned of it, however, through either the staff or applicants.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Alan S. Rosenthal, Chairman
Dr. John H. Buck
Dr. Lawrence R. Quarles

In the Matter of

**Docket Nos. 50-338 OL
50-339 OL**

**VIRGINIA ELECTRIC AND POWER
COMPANY**

**(North Anna Nuclear Power
Station, Units 1 and 2)**

May 26, 1982

Upon its *sua sponte* review in this operating license proceeding of the unresolved generic safety issue of danger to internal plant safety-related components from missiles caused by the breaking of turbine discs, the Appeal Board finds that full power operation of the plant's two units will not pose an undue risk to the public health and safety, provided that (1) the applicant's current inspection procedures pertaining to overspeed detection and control of the turbines are maintained, and (2) the turbine discs are subjected to ultrasonic inspection at specified intervals.

TECHNICAL ISSUES DISCUSSED:

Internally generated turbine missiles;
brittle or ductile cracking;
intergranular stress corrosion cracking;
critical crack size;
turbine inspection intervals and
techniques.

APPEARANCES

Messrs. Michael W. Maupin, James N. Christman and James M. Rinaca, Richmond, Virginia, for the applicant, Virginia Electric and Power Company

Messrs. Daniel T. Swanson and Henry J. McGurren for the
Nuclear Regulatory Commission staff

DECISION

Several years ago, in the course of the review on our own initiative of two Licensing Board decisions in this operating license proceeding,¹ we took note, *inter alia*, of an unresolved generic safety issue of seemingly special relevance to the two-unit North Anna nuclear facility. ALAB-491, 8 NRC 245 (1978). That issue pertained to the protection of safety-related components from missiles generated either inside or outside the facility.² This subject had been dealt with in a series of Task Action Plans prepared by the NRC staff,³ and also had received the attention of the Advisory Committee on Reactor Safeguards. *Id.* at 249. The particular concern in the instance of North Anna stemmed from the fact that the orientation of its four Westinghouse turbines (two in each unit) was such that safety components might be in the path of a missile generated by a turbine failure inside the facility.

At that threshold stage, we directed the staff to supply us, in affidavit form, with "a full and detailed explanation of why it is acceptable to permit the North Anna units to operate in the face of" the unresolved missile issue. *Ibid.* Following receipt of both that explanation and further submissions by the parties and an *amicus curiae*,⁴ we entered an order in which we narrowed the inquiry to "the possibility of damage caused, not by objects originating outside the plant, but by pieces of the turbine breaking loose." ALAB-529, 9 NRC 153, 154 (1979). Additionally, the order called for an evidentiary hearing on the turbine missile matter.

¹ LBP-77-68, 6 NRC 1127 (1977) and LBP-78-10, 7 NRC 295 (1978).

² In this context, a missile is a high-velocity fragment produced by the breakup of an object (such as a fence or barn during a tornado or, as will shortly be seen, a component within the facility).

³ In response to a Commission directive to develop "a program for resolution of generic issues and completion of technical projects," the Office of Nuclear Reactor Regulation developed a list of unresolved generic safety items and set up a series of tasks to study and resolve each item. See *NRC Program for the Resolution of Generic Issues Related to Nuclear Power Plants* (NUREG-0410, January 1978). For a discussion of the manner in which unresolved generic safety issues are to be dealt with in individual licensing proceedings, see *Gulf States Utilities Co.* (River Bend Station, Units 1 and 2), ALAB-444, 6 NRC 760, 783 (1977).

⁴ Of the parties before the Licensing Board, only the applicant and the NRC staff have participated to any extent in our examination of the missile issue. Although, with our leave, the Union of Concerned Scientists filed an *amicus curiae* brief in connection with the staff's initial response to ALAB-491, that organization did not seek to involve itself in the proceeding thereafter.

The hearing was held in June 1979. Although it had been our original intent to decide the issue together with another, but unrelated, safety question (pumphouse settlement) which also had been explored at that hearing, it did not prove possible to do so. For, as noted in our decision with regard to pumphouse settlement,⁵ "new information of potential importance to the turbine missile issue has recently been brought to our attention, requiring us to withhold our disposition of that issue to await further developments."

Over the past two years, those developments have been unfolding and, on a periodic basis, reported to us. We are only now in a position to reach a satisfactory determination on the turbine missile issue. We do so in this opinion.⁶

I.

A.1. There is no disagreement that the ascertainment of the annual probability (referred to as P_4) that a safety-related component will be damaged as a result of a turbine missile involves the determination and multiplication of three subsidiary annual probabilities: the probability (P_1) that a turbine disc will break and a portion thereof will penetrate the turbine casing and become a missile; the probability (P_2) that that missile will strike a reactor structure containing a safety-related component; and the probability (P_3) that the missile then will damage the component. As stated in equation form, $P_4 = P_1 \times P_2 \times P_3$.

In its initial response to ALAB-491,⁷ the staff first assigned a value of 10^{-4} to P_1 ; *i.e.*, it assumed that, for each turbine, there was one chance in ten thousand that during the course of a year a missile would be generated.⁸ This figure was arrived at on the basis of "historically observed turbine failures for the last 20 years or so."⁹ In addition, the staff apparently assumed that the primary cause of the breaking of a turbine disc would be overspeed stress: *i.e.*, the stress on the disc produced by a

⁵ ALAB-578, 11 NRC 189, 191 (1980).

⁶ The reasons why we allowed operation of the North Anna units during the period that the turbine missile issue remained open are set forth in ALAB-589, 11 NRC 539 (1980).

⁷ "Response to Atomic Safety and Licensing Appeal Board's Request for Information on the North Anna Units 1 and 2 Regarding Missiles," dated September 15, 1978 (hereinafter "Staff Response").

⁸ See Enclosure 2 to Staff Response, entitled *Task Action Plan for Task A-37*, at p. 37/4.

⁹ Staff Response, pp. 4-5. It elsewhere appeared that the source of the data was Bush, *Probability of Damage to Nuclear Components Due to Turbine Failure*, 14 Nuclear Safety 187-201 (1973).

rapid increase in the speed of the turbine rotor as a result of a dropping of the electric load. This is seen from the staff's observation that its reliance on historical turbine failure rates was conservative in that "modern turbines have substantial design improvements in terms of materials and overspeed protection systems."¹⁰

Having settled upon a P_1 value, the staff then turned to P_2 and P_3 . It found the probability that a generated missile would strike a vital reactor structure (P_2) to be 2×10^{-1} (two chances in 10). In further conservatively assumed that $P_3 = 1$; *i.e.*, that any such strike perforce would cause unacceptable damage within that structure. Thus, the staff's ultimate result was that the upper limit probability of turbine missile damage to a safety-related component was 2×10^{-5} per turbine year — that is, $10^{-4} \times (2 \times 10^{-1}) \times 1$.¹¹

We were told by the staff that, notwithstanding what it deemed to be the conservative assumptions built into that computation, it nevertheless had required the applicant "to adhere to certain measures designed to further reduce missile risks."¹² Our attention was specifically directed to the turbine valve inspection requirements and the maintenance and testing procedures set forth in its Safety Evaluation Report for the facility.¹³ In the totality of these circumstances, the staff saw no reason to halt the operation of the facility.¹⁴

2. The evidence presented by the staff and applicant at the June 1979 hearing similarly was rooted in the premise that any turbine failure likely would be brought about by brittle or ductile fracture¹⁵ stemming from an overspeeding of the turbine due to loss of electric load.¹⁶ For its part, the staff essentially adhered to its prior analysis and the conclusion

¹⁰ Staff Response, p. 5.

¹¹ *Ibid.* See also, North Anna Safety Evaluation Report, Supp. 2, Section 10.7. It should be noted that the Staff Response did not explicitly set forth a value for P_2 . This value was readily determinable, however, given the assigned values for P_1 and P_3 and the calculated value for P_4 .

¹² Staff Response, p. 5.

¹³ *Id.* at pp. 5-6.

¹⁴ *Id.* at p. 6.

¹⁵ Such fractures are the product of mechanical forces being brought to bear upon the object. Susceptibility to a breakup of that nature under a particular stress is influenced by, *inter alia*, the toughness and malleability of the material.

¹⁶ With respect to the possibility of failure induced by stress corrosion (*i.e.* cracking caused by a combination of relatively high stress and corrosive environments), it was assumed that any corrosive impurities in the steam would be deposited in the low pressure areas of the turbine where steam condensation occurs and that the routine water chemistry monitoring performed at North Anna would prevent serious problems. See Staff Testimony, foll. App. Tr. 580, at 24-25, 37-38; see also App. Tr. 598-600.

reached therefrom that P_4 could conservatively be assigned an upper limit of 2×10^{-5} per turbine year.¹⁷

The applicant's testimony stressed that the historical data on turbine disc failures (upon which the staff had based its P_1 value of 10^{-4}) had been derived from old steam turbines and that the turbines now in use have a lower probability of brittle or ductile fracture because of such considerations as improved materials and quality assurance and better overspeed control.¹⁸ In this connection, we were furnished with a description of the North Anna turbines, their overspeed detection and control devices and the extensive inspection system employed to ensure the reliability of those devices.¹⁹ With these factors in mind, and utilizing a fault tree analytic method,²⁰ the applicant arrived at the conclusion that the annual per turbine probability of generating a destructive overspeed missile would be 1.7×10^{-6} .²¹ Insofar as an overspeed within design limits was concerned, the probability of a missile resulting from such an event was estimated to be 1.05×10^{-10} .²²

B.1. In December 1979, while we still had the turbine missile matter under advisement, the staff informed us that cracks had been found in

¹⁷ Staff Testimony, foll. App. Tr. 580, at 10. The staff added, however, that it deemed 7.3×10^{-7} to be a more realistic estimate. *Id.* at 55.

¹⁸ VEPCO Testimony on probability of Generating Turbine Missiles and Turbine Overspeed Protection System, foll. App. Tr. 19, at 9. See also App. Tr. 478-82.

¹⁹ VEPCO Testimony, fn. 18, *supra*, at 2-5; VEPCO Testimony on P2 and P3 and Turbine Inspection, foll. App. Tr. 19, at 6-8. This testimony is reproduced in the Appendix to this opinion.

²⁰ It turned out that the witness who testified at the hearing on the fault tree analysis was unable to supply the foundation data employed in that analysis: *i.e.*, the individual values of the various components ("root events") of the tree. These data were subsequently furnished under protective order. See ALAB-555, 10 NRC 23 (1979).

²¹ VEPCO Testimony, fn. 18, *supra*, at 6-8. "Destructive overspeed" was defined as "the lowest calculated speed at which a low-pressure rotor disc will burst, based on the average tangential stress being equal to maximum ultimate tensile strength of the disc material, assuming no flaws or cracks in the disc." *Id.* at 6.

²² *Id.* at 8. The applicant explained that "[a] design overspeed of 120 percent of rated speed is based on the precept that, should the turbine speed governing system be incapacitated so that on loss of full load the turbine is tripped by the overspeed trip mechanism, the calculated speed attained will not exceed 120 percent of rated speed. Turbine rotors are designed for this condition with appropriate margin and tested to 120 percent of rated speed." *Id.* at 6.

The applicant's testimony also addressed the mode of calculation of P2 and P3. See VEPCO Testimony on P2 and P3 and Turbine Inspection, foll. App. Tr. 19. See also, Final Safety Analysis Report, Table 10.2-4, Figures 10.2-4 and 10.2-5; Amendment 36 to the FSAR, Figures 10.2-1 through 10.2-3. For present purposes, it is unnecessary to discuss that evidence in detail.

"several" low pressure turbine discs of Westinghouse manufacture.²³ The report indicated not only that disc cracking was much more widespread than previously assumed, but also that stress corrosion appeared to be involved.²⁴ Further, the staff stated that Westinghouse was in the process of recalculating the energies of possible turbine missiles. The assigned reason was that recent tests had indicated that non-symmetric fragments of a fractured turbine disc might, as a result of their impact with other internal turbine parts, achieve higher energies as missiles than had been previously estimated.²⁵

It was this information that prompted our decision to hold the turbine missile issue in abeyance to await additional developments. See p. 1119, *supra*. In February 1980, we were apprised of meetings during the prior two months which involved the staff, Westinghouse, an ACRS subcommittee and utility representatives.²⁶ Westinghouse had supplied the staff with information which dealt specifically with cracking in its 1500/1800 RPM turbines. According to the staff, that information revealed that:

Since the initial observation of cracks in the disc keyway, Westinghouse has been training teams to inspect the turbines of all units, both nuclear and fossil-fueled, that are suspect. To date, 19 rotors have been inspected and 10 have been observed to have cracked discs. Of the 183 discs inspected 14 have been cracked. Cracks up to 0.4-inch in depth have been observed in discs with as little as 40 months service. In addition, two discs in a turbine with 78 months service were observed to have bore cracks of up to 1.2-inches depth and 2.5-inches length but no keyway cracks. Other cracks have been observed in the face of discs behind a spacer and in the lip of the spacer groove. Analytical examinations reveal the presence of chlorides and hydroxide in the keyway cracks, but the initiation of stress corrosion has not been correlated quantitatively with secondary water chemistry. The cracks in the discs bores do not appear to be caused by stress corrosion. Westinghouse has developed ultrasonic techniques that do not require removal of the discs, however, an inspection requires approximately 14 weeks for one end or approximately 19 weeks for both

²³ December 12, 1979 Memorandum from M.L. Boyle to S.S. Pawlicki, entitled "Notification of ASLAB of Westinghouse Turbine Disk Cracking," at p. 1. This information was transmitted to this Board under the standard Board Notification procedure instituted by the staff several years ago.

²⁴ *Ibid.*

²⁵ *Id.* at p. 2.

²⁶ February 5, 1980 letter from Daniel T. Swanson to this Board.

ends when performed at the Westinghouse facility at Charlotte, North Carolina. It is hoped that inspections can be performed in the field in 1980.²⁷

In light of these disclosures, we asked the parties to address further in written submissions the matter of crack initiation and growth. The responses to that request pointed to data — derived partially from the widespread turbine disc cracking experienced in Great Britain in the early 1970s — which were said by the staff to establish that, once initiated, cracks grow at a rate influenced by “disc material and heat treatment, keyway and bore design, temperature of operation, and to some degree steam chemistry.”²⁸ The staff also took note that, by the employment of standard linear elastic fracture mechanics theory, it is possible to determine at what length the crack would become critical; *i.e.*, might cause disc failure.²⁹

2. During the remainder of 1980 and the first half of 1981, the applicant (through its contractor Stone and Webster), Westinghouse and the staff continued their analyses of the cause of turbine disc cracking and the rate of growth of initiated cracks. These analyses proceeded against the background of two intervening events: (1) the discovery of cracks in a turbine in the Farley facility which indicated a crack growth rate larger than that previously encountered;³⁰ and (2) an ultrasonic inspection of the North Anna 1 turbines during a routine shutdown in early 1981, which located two cracks in the keyway of the rotor of one of them. The latter cracks were, respectively, 0.360 inches and 0.2 inches in depth and 1.0 inch and 0.5 inches in length.³¹ A later examination of one of them showed

²⁷ January 9, 1980 memorandum from William J. Ross to A. Schwencer, entitled “Summary of Meeting with Westinghouse Related to Cracking in Turbine Rotors,” at pp. 1-2. (This memorandum accompanied Mr. Swanson’s letter, fn. 26, *supra*).

²⁸ See Attachment 1 to “NRC Staff Response to Appeal Board’s Memorandum and Order of March 3, 1980,” dated March 24, 1980, at pp. 1-2. Although not there specifically stated, it appears that, following initial development, cracks tend to grow linearly with time (*i.e.*, at a constant rate). See fn. 41, *infra*.

²⁹ *Id.* at p. 4. More particularly, the following formula is employed to determine critical crack size (A_{crit}):

$$A_{crit} = \frac{Q}{1.21 \pi} \left(\frac{K_{Ic}}{\sigma} \right)^2$$

Q is a complex function related to the shape of the assumed crack and the ratio of the applied stress to the yield strength of the material; σ is the nominal stress at the bore; and K_{Ic} is the fracture toughness of the material. The K_{Ic} value is usually obtained from the empirical relationship developed with the use of Charpy V impact test results. See Barsom and Rolfe, *Correlations Between K_{Ic} and Charpy V - Notch Test Results in the Transition - Temperature Range*, American Society for Testing and Materials, Special Technical Publications, 466, 1970, pp. 281-302.

³⁰ See December 23, 1980 letter from Thomas M. Novak to this Board.

³¹ See January 15, 1981 Preliminary Notification of Event or Unusual Occurrence (PNO-II-81-05), attached to January 21, 1981 letter from Thomas M. Novak to this Board.

that "[t]he major portion [of cracking was] * * * developed by intergranular stress corrosion."³² Confronted with this information, the applicant decided to replace the rotor with a compatible one from the disabled Unit 2 of the Three Mile Island facility (an ultrasonic inspection of the latter had disclosed that it was free of defects). This replacement was accomplished in late February 1981. In an unpublished memorandum and order entered on February 23, 1981, we approved the resumption of Unit 1 operation at such time as the staff was satisfied that the rotor had been properly installed.³³ The timing of the next inspection was left open.³⁴

3. In May and June 1981, Westinghouse supplied the applicant with three reports on the subject of turbine disc cracking and inspection. Copies of these documents were thereafter sent to the staff and this Board as VEPCO Exhibits V-1,³⁵ V-2³⁶ and V-3,³⁷ with the notation that they were considered by Westinghouse to include proprietary information. In October 1981, the applicant filed, as its Exhibit V-4, a Stone and Webster report concerned with the probability of turbine missile damage at North Anna.³⁸ Portions of this document likewise were asserted to contain proprietary information.

Because of our agreement to treat as confidential disclosures in those reports which might reasonably be taken to be proprietary in character, we

³² VEPCO Exhibit V-22, entitled "Investigation of Keyway Cracking in LP Turbine Discs, Interim Data Summary" (October, 1981), at p. 5-1. This investigation was conducted by the Southwest Research Institute of San Antonio, Texas.

³³ As the February 23 order reflects (at p. 3), this approval was founded upon not only the documentary submissions to us but also, additional information which we obtained during our visit to the North Anna Unit 1 turbine building on February 19, 1981.

Unit 1 actually resumed operation on April 6, 1981.

³⁴ In that connection, we explained that, during the course of our site visit, the staff had stated that it was reconsidering its analytical model pertaining to crack growth in light of the then recent cracking experience at the Farley facility. February 23 order, at p. 3.

It should be noted that, throughout this period, our concern was focused upon Unit 1. Unit 2 did not commence operation until mid-1980 and we were satisfied from the evidence at hand that the turbine disc cracking phenomenon is time-related. See ALAB-589, 11 NRC 539, 540 (1980). See also November 18, 1980 order (unpublished) at fn. 1. In an April 3, 1981 order (unpublished), however, we recorded our expectation that the Unit 2 turbines would undergo an ultrasonic inspection at the first refueling shutdown of that unit.

³⁵ Criteria for Low Pressure Nuclear Turbine Disc Inspection, June 1981.

³⁶ Missile Energy Analysis Methods for Nuclear Steam Turbines, May 1981.

³⁷ Procedures for Estimating the Probability of Steam Turbine Disc Rupture from Stress Corrosion Cracking, May 1981.

³⁸ Summary Report: Turbine Missile Damage Probability Analysis for North Anna Units 1 and 2.

confine ourselves here to a summary of their content with no direct reference to any such disclosure.³⁹

a. **Exhibit V-1.** This report addresses the matter of the frequency of ultrasonic inspections required to prevent a turbine disc breakup as a result of cracking.⁴⁰ The inquiry involves consideration of the causes of cracking; the growth rate of a crack once initiated; and critical crack size (which is influenced by the shape of the particular crack). With regard to the last-mentioned factor, Westinghouse resorts to the linear elastic fracture mechanics formula which is discussed above. See fn. 29, *supra*. Furthermore, according to the report, there are many variables affecting the rate of growth of a crack following its short initiation period.⁴¹ Those variables include environmental conditions (*i.e.*, whether corrosive elements are present), the location of the crack and temperature. See p. 1123, *supra*. Because the turbine environment may vary widely from facility to facility, Westinghouse relies upon available experimental data on crack development to establish ranges for the rate of crack growth.

In essence, Westinghouse arrives at its recommended inspection intervals by employment of a crack growth rate model developed from the accumulated data pertaining to crack initiation, crack shapes and rates of growth. According to the report, the ultimate aim is to have the inspections frequent enough to insure that no crack reaches 3/4 of its calculated critical size without detection. In this connection, the report noted that several conservative assumptions undergirded the critical size calculation, with the result that the actual critical size would be substantially greater.

b. **Exhibit V-2.** This comprehensive treatise (approximately 300 pages in length) is concerned with turbine missile energy and is divided into three parts.

³⁹ Westinghouse's first claim of entitlement to a protective order was advanced in connection with the data in support of its fault tree analysis. See fn. 20, *supra*. Although finding that the affidavit submitted with that claim did not satisfy the requirements laid down in *Kansas Gas and Electric Co.* (Wolf Creek Nuclear Generating Station, Unit No. 1), ALAB-327, 3 NRC 408, 416-18 (1976), we nonetheless decided to provide the requested protection. This was because no party had interposed an objection and we were desirous of obtaining the information in question "without untoward further delay." See ALAB-555, 10 NRC 23, 27-28 (1979). That protection was then automatically extended to all further Westinghouse submissions asserted to contain proprietary information. As noted in ALAB-555, however, the course which has been followed in this instance is not to be taken as a precedent. *Id.* at 28.

⁴⁰ As previously noted, Westinghouse has devised techniques for conducting such inspections of low pressure turbine discs without turbine disassembly. See pp. 1122-1123, *supra*. See also, VEPCO Exhibit V-7, entitled "North Anna Unit #1 Low Pressure Disc Ultrasonic Inspection Report" (January 16, 1981).

⁴¹ The report indicates that, during that initiation period, the crack may grow rapidly; experimental test results show, however, that there is then a slower, constant growth rate until critical crack size is reached.

Part A discusses "the kinetic energy of external missiles that hypothetically could result if a turbine rotor were to rupture at normal speed, design overspeed, or destructive overspeed" for units in nuclear power facilities. It considers the methods of "calculating the kinetic energy of postulated rotor fragments before any interaction with the turbine stationary parts." Exh. V-2, p. A4.

Part B "is concerned with the determination of whether or not a disc burst will result in missiles being ejected from the turbine casing, and if so, the external kinetic energy properties of those missiles." It includes the results of analytical procedures, and of laboratory tests which confirmed some portions of the analyses. Exh. V-2, p. B5. The basic analysis follows the Hagg-Sankey method and is applied specifically to turbines and their casings. *Id.* at B13.⁴² It is *not* a probabilistic study of missile penetration but, rather, essentially a deterministic analysis of the consequences of various size disc fragments striking the casing. This initial strike might be followed by repeated impacts from the same fragment or other fragments with additional resultant damage.

Part C describes the methods and procedures for evaluating the effects of disc fragments hitting the blade rings and outer cylinder of the turbine. The effects of fragments hitting four representative locations around the outer cylinder are considered.

c. **Exhibit V-3.** This document focuses upon turbine disc rupture occasioned by stress corrosion cracking. It uses data from Westinghouse turbine experience to determine (1) the location of cracks (*i.e.*, in the bore itself or in one or more keyways or both); and (2) the range of crack growth rate(s) for various crack locations. As noted in Exhibit V-1, this study supports the theory that, whether located in the bore or in a keyway, the cracks are the product of stress corrosion, since no cracking has been observed in dry steam areas.

The report concludes with three figures (9-11) which plot the probability of missile generation (P_i) against the inspection intervals in years. The figures cover three turbines of differing materials. In general, they reflect a P_i value of 10^{-5} to 10^{-6} for 1 to 2 year inspection intervals for two of the turbines, but a value of 10^{-3} to 10^{-4} for the third. The P_i probability increases to 10^{-2} to 10^{-3} for 4 year inspection intervals.

d. **Exhibit V-4.** The purpose of this Stone and Webster report, directed specifically to the North Anna facility, was to "compute the annual probability P_d of significant damage to plant structures, systems, and components resulting from postulated turbine failure." Exh. V-4, p. 1.

⁴² See Hagg and Sankey, *The Containment of Disc Burst Fragments by Cylindrical Shells*, American Society of Mechanical Engineers Paper No. 73-WA/PWR-2, August 1, 1973.

As earlier noted (p. 1119, *supra*), P_4 is the product of three factors, P_1 , P_2 and P_3 .

The report assumes, as had the initial staff presentation to us,⁴³ a 10^{-4} value for P_1 . It then independently calculates values for P_2 and P_3 in order to arrive at the P_4 value. The final summation of the results of the analysis is contained in the following table (Table C-19 of Appendix C to Exh. V-4):⁴⁴

TABLE C-19
TOTAL DAMAGE PROBABILITY (P_4)

UNIT 1		P ₄ /UNIT/OPERATING PERIOD		
OPERATING TIME (YRS.)	CRITERIA A ⁽¹⁾	CRITERIA B ⁽²⁾	P _S = 0.05	
1	1.019 × 10 ⁻⁶	4.812 × 10 ⁻⁷	5.081 × 10 ⁻⁷	
2	2.265 × 10 ⁻⁵	1.053 × 10 ⁻⁶	2.133 × 10 ⁻⁶	
3	1.525 × 10 ⁻⁴	2.110 × 10 ⁻⁶	9.629 × 10 ⁻⁶	

UNIT 2		P ₄ /UNIT/OPERATING PERIOD		
OPERATING TIME (YRS.)	CRITERIA A ⁽¹⁾	CRITERIA B ⁽²⁾	P _S = 0.05	
1	8.676 × 10 ⁻⁷	4.795 × 10 ⁻⁷	4.988 × 10 ⁻⁷	
2	1.696 × 10 ⁻⁵	1.381 × 10 ⁻⁶	2.159 × 10 ⁻⁶	
3	1.136 × 10 ⁻⁴	3.447 × 10 ⁻⁶	8.955 × 10 ⁻⁶	

- ⁽¹⁾ CRITERIA A - Present *conservative* NRC approach equates the initiation of scabbing within a safety related cubicle with a damage probability of 1.0
- ⁽²⁾ CRITERIA B - Slightly *unconservative* approach which neglects scabbing damage if missile perforation is prevented
- ⁽³⁾ P_S = 0.05 - Assumes a realistic probability of 5% for ensuing safety related damage if a missile strike results in scabbing without perforation.⁴⁵

⁴³ See p. 1119, *supra*.

⁴⁴ As used in the table, the term "unit" refers to a single turbine and the term "operating period" to the length of time between fuel loadings that the reactor was in actual operation.

⁴⁵ This table is not claimed to contain proprietary information. "Scabbing" refers to the creation of a secondary missile (such as a piece of concrete) within a vital structure as a result of the turbine missile striking (but very likely not penetrating) a reinforced wall of that structure.

4. As is seen from the foregoing, the various analyses put before us by the applicant approach the problem at hand from two different standpoints. Exhibits V-2, V-3 and V-4 all are addressed to the P_4 assessment; *i.e.*, to the annual probability that a safety-related component would be damaged by a turbine missile.

In contrast, Exhibit V-1 is not principally concerned with the P_4 probability. Rather, its focus is upon the avoidance of a stress corrosion-induced disc fracture through the mechanism of routine ultrasonic inspections at specified intervals: *i.e.*, upon preventing the occurrence of the event that might possibly give rise to a turbine missile and, ultimately, to unacceptable damage. Moreover, Westinghouse's methodology for fixing those inspection intervals has a deterministic foundation: it utilizes actual data from which it is possible to ascertain with reasonable precision the rate of growth of a crack in a particular turbine disc.

Being a generic study, Exhibit V-1 does not focus upon the North Anna units specifically. In a memorandum to this Board, however, applicant's counsel represented that the Exhibit V-1 analysis calls for inspections every 43.3 operating months (in the case of Unit 1) and every 39.9 operating months (in the case of Unit 2).⁴⁶ This conclusion rested upon two premises.

The first was that, unlike the No. 2 discs, the No. 1 discs in each turbine in each unit are "contained"; *i.e.*, should one of those discs fracture as a result of stress corrosion, no fragment would penetrate the protective turbine casing and thereby become a missile capable of damaging to a safety-related component. In justification of this premise, counsel pointed to Westinghouse's calculations founded upon the application of its methodology for determining fragment and missile energy (VEPCO Exhibit V-2, *supra*) — the results of which calculations are found in VEPCO Exhibit V-13.⁴⁷

The second premise was that the inspection intervals should be based upon the uncontained No. 2 disc in each unit that was most "critical": *i.e.*, had the greatest vulnerability to the production of a turbine missile should cracking occur. From an application of the Westinghouse analyses, this appeared to be the No. 2 disc at the generator end of Turbine No. 1 (Unit 1) and the same disc of Turbine No. 2 (Unit 2).⁴⁸

⁴⁶ Memorandum of VEPCO's counsel on North Anna 1 and 2 Turbine Missile Analysis, dated October 21, 1981, at pp. 2, 12, as revised by enclosures to January 21, 1982 letter from James N. Christman to the Chairman of this Board. These intervals are premised on no cracks having been discovered at the prior inspection. If a crack had been found, its calculated growth rate would determine when the next inspection would be necessary.

⁴⁷ *Id.* at p. 10.

⁴⁸ VEPCO Exhibit V-6, Table 1.

Counsel went on to note, however, that the applicant might nonetheless elect to inspect the discs at shorter intervals; more particularly, after approximately 33 operating months (which represents two refueling cycles). We were told that there was an *economic* rather than a *safety* reason for following that course. Specifically, even though a No. 1 disc fracture would not (according to Westinghouse) result in a turbine missile and therefore would have no safety implications, the fragment(s) likely would seriously damage other internal parts of the turbine at substantial financial cost to the applicant. Accordingly, it might be in the applicant's pecuniary self-interest to establish its inspection schedules without regard to whether a particular disc was or was not contained. In this connection, the Westinghouse analyses reflected that, to prevent the possible fracture of a No. 1 disc, the inspection intervals for Units 1 and 2 should be 34.9 and 32.5 operating months, respectively.⁴⁹

5. On January 22, 1982, the staff submitted the written testimony of two witnesses which addressed, *inter alia*, the staff's criteria for turbine disc inspections.⁵⁰ These witnesses, both metallurgical engineers, stated that they had reviewed applicant's Exhibit V-1 and had concluded that "the inspection schedules derived by its use are consistent with [the staff's] past criteria and current understanding of the cracking problem." They added that "[a]dherence to these inspection schedules will provide an acceptably high degree of assurance that discs will be inspected before cracks can grow to a size that would cause disc failure."⁵¹

Because this testimony did not make direct mention of the October 21 memorandum of applicant's counsel, we sought clarification from the staff on whether its witnesses were endorsing the inspection intervals which counsel had represented to be the product of the Exhibit V-1 analysis. In its response of May 19, 1982, the staff informed us that it had not as yet completed its review of the Westinghouse analyses and calculations underlying the conclusion that the No. 1 discs are contained and consequently need not be factored into the inspection interval determination. That being

⁴⁹ October 21, 1981 memorandum, at pp. 12-14, as revised on January 21, 1982. Thus, as apparent, it has been determined that cracks in the No. 1 discs would have a higher growth rate than those in the No. 2 discs.

⁵⁰ NRC Staff Testimony of Warren S. Hazelton and Clifford D. Sellers Regarding Turbine Disc Cracking.

⁵¹ *Id.* at 18. It might be noted, however, that the staff's criteria include the standard that "a new disc, or a disc found free of cracks by inspection, can operate until the time calculated for a new crack to grow to one half of critical depth." *Ibid.* As earlier seen p. 1125, *supra*, the Westinghouse standard appears to be 3/4 rather than one-half of critical size.

so, the staff is of the opinion that the 34.9 and 32.5 operating month intervals (see p. 1129. *supra*) should obtain at this juncture.⁵²

Given this staff position, the applicant (through its Vice President for Nuclear Operations) has committed itself in writing to conduct the inspections in accordance with the 34.9 and 32.5 operating month schedule unless and until the staff approves a modification of that schedule.⁵³ Such approval would presumably be forthcoming when and if the staff becomes satisfied that, in fact, the No. 1 discs are contained and, thus, the fracture of one of them would not threaten to create a turbine missile.⁵⁴

II.

On the basis of the record before us, as summarized in material part above, we reach the following conclusions.

1. When we commenced our turbine missile inquiry in 1979, brittle fracture⁵⁵ was apparently thought to be the principal cause of turbine disc cracking. But such is not the case. Rather, it is now recognized that the more serious concern is stress corrosion. Unlike brittle fracture, which generally is the product of turbine overspeed, stress corrosion cracking can occasion a disc failure at normal turbine operating speeds, as well as under startup stress. In this connection, the evidence suggests that the very emphasis on improved material to enhance brittle fracture toughness may have also increased the susceptibility of the discs to stress corrosion.⁵⁶

2. So long as the applicant maintains its existing and extensive inspection system with regard to the reliability of the overspeed detection and control devices,⁵⁷ there will be no undue risk to the public health and safety stemming from a turbine missile *generated by a brittle fracture*. Stated otherwise, the totality of the evidence indicates, and we so find, that, if the likelihood of a destructive overspeed is minimal, the annual

⁵² Supplemental Testimony of Warren S. Hazelton and Clifford D. Sellers Regarding Turbine Inspection Schedules for North Anna 1 and 2, at 3-4. The witnesses added, however, that the staff would likely agree to an extension of the inspection interval of up to 10% to accommodate refueling schedules for North Anna 1 or 2. *Id.* at 3. This is because there are "such wide margins of safety incorporated into the inspection intervals."

⁵³ May 18, 1982 letter from R.H. Leasburg to Harold R. Denton.

⁵⁴ A limited schedule alteration might also be allowed to synchronize the inspection with a routine refueling outage. See fn. 52, *supra*.

⁵⁵ In the ensuing discussion, our use of the term "brittle fracture" includes ductile fracture as well.

⁵⁶ See Testimony of Hazelton and Sellers, fn. 50, *supra*, at 12-13.

⁵⁷ See p. 1121. *supra*, and the Appendix to this opinion.

probability of such a missile being created (P_1) and ultimately causing damage to a safety-related component (P_4) falls well within acceptable limits.⁵⁸ It is nonetheless obvious, however, that continued attention should be given to proper disc metallurgy, which will further serve the end of preventing brittle fracture-induced disc failures and, thus, the possible creation of turbine missiles.

3. Although the root cause of brittle fracture is known, the same cannot be said with respect to stress corrosion cracking. There does appear to be general agreement that such cracking is not associated with dry steam and hence it can be expected to occur only on low pressure discs where steam condenses in the rotor areas. But no specific contaminant in the water has been correlated with the initiation of cracks either in the rotor itself or in the keyways.⁵⁹ Moreover, stress corrosion may be encountered in a disc (or discs) of one turbine but not in those in another turbine in the same facility.⁶⁰ Still further, while initiated cracks expand at an essentially constant rate, that rate may vary from rotor to rotor. In this connection, it is not certain whether the maximum crack growth rate has yet been experienced; nor is it known what conditions might bring about still greater growth rates.

In these circumstances, with respect to stress corrosion-induced cracking we have chosen to eschew reliance upon the results of the Westinghouse and the Stone and Webster probability studies which have been presented to us. While there may be no serious flaws in the analyses and calculations

⁵⁸ In this regard, two considerations should be kept in mind with respect to the staff's initial assignment of a 10^{-4} value to P_1 based upon historical turbine failure data (which, in turn, had led to the assignment of a 2×10^{-5} value for P_4). See pp. 1119-1120, *supra*. The first is that the historical data to which the staff resorted undoubtedly had included all turbine failures — whether occasioned by brittle fracture or, instead, stress corrosion. As we have reiterated, however, the latter is now understood to be the major cause of disc cracking. Secondly, the likelihood of brittle fracture was much greater then than it is now because of improvement in materials and quality assurance, as well as better overspeed control. See p. 1121, *supra*. In short, the historical data have little meaning insofar as the present probability of a brittle fracture-induced turbine failure is concerned.

⁵⁹ See Attachment I to March 24, 1980 "NRC Staff Response to Appeal Board's Memorandum and Order of March 3, 1980," at p. 1. The attachment was prepared by Mr. Hazelton, who attested to its content by affidavit.

⁶⁰ See Testimony of Hazelton and Sellers, fn. 50, *supra*, at 14. The witnesses referred specifically to the experience at the Yankee Rowe facility: "The two number one discs were of identical design, were manufactured according to the same procedures, were made from the same steel ingot, and of course were subject to as similar temperature and environmental conditions as we could possibly hope to have. Yet one suffered hundreds of significant stress corrosion cracks, and the other had none."

It is possible, of course, that machining errors may cause misfitting between the rotor bore and the shaft onto which it is shrunk. A bore slightly too small or a shaft too big could cause much larger stresses in some rotors than in others. This matter was not addressed by the parties.

which underlie those results, the abiding uncertainties make such reliance imprudent. We are reinforced in this view by what the staff told us in March 1980:

At the present time, it is not known what the exact conditions are at turbine disc bores and keyways that cause cracking. It is known that caustic and some acids will cause cracking of turbine disc steels, but laboratory and field tests also have shown that under the right conditions, cracks can be initiated and propagated by pure steam or high temperature water. It is also known from laboratory tests that under some conditions cracks need a significant period of incubation to initiate, whereas under other conditions cracks will start to grow as soon as service conditions are applied. These situations make the job of accurately *predicting* actual crack growth rates and crack sizes in service an impossible task. We have not tried to do this.

What we do try to do is to predict what the worst case is likely to be. If enough data are available representing the total spectrum of relevant conditions, the worst cases can be considered an upper bound to probable future crack growth rates. Of course we cannot be *sure* that the data include worst possible cases, but if sufficient conservatism is placed on the use of the crack growth determinations, the method can provide reasonable assurance that inspections will be performed before cracks grow to unacceptable depths.⁶¹

These observations seem as valid today as they were two years ago.

Rather, Westinghouse's deterministic approach detailed in Exhibit V-1 commends itself to us. As previously seen, it is possible, utilizing empirical data, to determine with reasonable certainty the length of time that will elapse before an initiated stress corrosion-induced crack might reach critical size. The Westinghouse methodology employed in making that determination has the staff's endorsement, and our own examination of it gives us no reason to disapprove it.

Insofar as the precise ultrasonic inspection schedules for the two North Anna units are concerned, we encounter no difficulty in accepting the calculations for the No. 1 and the No. 2 discs which have been derived by the parties from the application of the Westinghouse methodology. What remains is the question of which discs should control those schedules in the interest of providing reasonable assurance that any stress corrosion-induced

⁶¹ See Attachment 1 to March 24, 1980 staff filing (fn. 28, *supra*), at pp. 1-2.

crack would not bring about the generation of a turbine missile;⁶² that, in turn, hinges upon whether the No. 1 discs are contained. We might, of course, hold this proceeding in still further abeyance to await the completion of the staff's review of the Westinghouse analyses and calculations which produced an affirmative answer on the containment matter. Given, however, the applicant's willingness to commit itself to the inspection intervals founded upon the No. 1 discs until such time as it receives the staff approval for a schedule alteration, we see no compelling necessity to prolong our already extended involvement in the turbine missile inquiry.⁶³ Among other considerations, it is most likely that, the outcome of this specific staff review to one side, the continuing investigation of the causes and consequences of stress corrosion-induced disc cracking will bring to light new information bearing upon appropriate inspection schedules. Thus, nothing we might prescribe in that regard could be expected to have validity in perpetuity. This being so, it is best to decide the matter now on the basis of the information currently at hand, leaving it to the staff to deal with fresh developments as they occur in the fulfillment of its role as the ongoing monitor of nuclear facility operation.

For the reasons heretofore stated, we find reasonable assurance that the full-power operation of the North Anna Units 1 and 2 steam turbines will not pose an undue risk to the public health and safety *provided that*:

1. The inspection procedures pertaining to overspeed detection and control are maintained. Any modification of the existing procedures is to be subject to prior staff approval.
2. The turbine discs of Units 1 and 2 are subjected to ultrasonic inspection at intervals of no greater than 34.9 operating months

⁶² We are not here concerned with what inspection intervals might be advisable from a purely economic standpoint; that is for the applicant to determine.

⁶³ It should be noted in passing that it might not make any practical difference whether the inspection schedules are geared to the No. 1 or, instead, the No. 2 discs. The end of the 43.3 and 39.9 operating month inspection intervals required (on the basis of currently available information respecting crack growth rates) for the No. 2 discs will be reached during the third fuel cycle (each fuel cycle being of approximately 16 to 17 operating months in duration). This being so, in all events, the applicant likely would conduct the inspections at alternate refueling outages to avoid having to shut down in the middle of a fuel cycle for that purpose. Additionally, there is the already discussed consideration of basing the inspections on the No. 1 discs to minimize the possibility of economic loss occasioned by a fracture of one of those discs.

(Unit 1) and 32.5 operating months (Unit 2) unless and until the NRC staff authorizes an increase in those intervals.⁶⁴

The staff is to prescribe the manner in which these provisos are to be memorialized. In this connection, we note simply our belief that it should not prove necessary to include them in the facility's technical specification.⁶⁵

It is so ORDERED.⁶⁶

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the Appeal Board

⁶⁴ Although not likewise a requirement, we strongly suggest that the turbine vendor be urged to continue its disc redesign effort now underway. The proposed design modification shown to us during our visit to the North Anna facility last year appeared to be a step in the right direction.

⁶⁵ To be sure, certain existing inspection procedures pertaining to overspeed detection and control devices are now included in the technical specifications for at least Unit 1. See pp. 1137-1138, *infra*. All that we mean to suggest is that there are adequate means available for insuring observance of requirements of the type herein involved short of conversion into technical specifications. The May 19, 1982 letter from staff counsel which accompanied the supplemental testimony of Messrs. Hazelton and Sellers (see fn. 52, *supra*) bears this out. Mr. Swanson noted that the applicant will be revising the FSAR for the two units to reflect the turbine inspection intervals to which it has committed itself. He went on to observe that, as a result, the inspection schedules will be subject to the restrictions of 10 CFR 50.59. For this reason, the staff "does not intend to impose [those schedules] in the form of a license condition or technical specification in the North Anna Units 1 and 2 operating licenses."

⁶⁶ This decision terminates our review of all issues in this proceeding other than that related to radon emissions in the mining and milling of uranium fuel. The radon issue will be addressed in this proceeding (in which it is not in contest) following its resolution in other proceedings in which it is contested.

APPENDIX

I. Excerpt from VEPCO Testimony on Probability of Generating Turbine Missiles and Turbine Overspeed Protection System, Introduced into Evidence Following App. Tr. 19, at pp. 2-5

II. DESCRIPTION OF NORTH ANNA TURBINES

The turbine-generators for North Anna 1 and 2 were designed and manufactured by the Westinghouse Electric Corporation, which has supplied turbine generators to industry for over 75 years. Each turbine at North Anna is a conventional 1800 rpm tandem-compound unit, consisting of one double-flow high-pressure cylinder and two double-flow low-pressure cylinders. Each turbine is provided with four moisture separator reheaters. Turbine extraction connections supply steam to six stages of feedwater heaters.

Each high-pressure steam pathway to the high-pressure cylinder contains a throttle valve and a governor valve. A reheat stop valve and an interceptor valve are provided in each crossover pipe between each moisture separator and each low-pressure turbine cylinder.

The turbine control system is of the electro-hydraulic type, ensuring rapid speed of response and control of turbine operation. The protective devices for the turbine include a low bearing oil pressure trip, a solenoid trip, overspeed trips, a thrust bearing trip, and a low vacuum trip. The solenoid trip will be actuated by malfunctions of the Steam and Power Conversion System, such as a reactor trip, generator trip, or loss of electro-hydraulic governor power.

The control system includes an overspeed protection controller, which acts to limit turbine speed in case of a load separation. The controller operates to close the turbine governor valves and the interceptor valves until the overspeed condition is corrected. Nonreturn valves are installed in the turbine extraction steam lines to minimize turbine overspeed following a trip. The North Anna turbines are equipped with an overspeed protection system consisting of an overspeed protection controller ("OPC"), a mechanical overspeed trip, and an electrical overspeed trip designed to operate as follows:

A. OPC—Anticipator (30% load or greater)

When the turbine is operating at 30 percent load or greater (as measured by a pressure corresponding to steam flow) and a load separation

occurs opening the generator circuit breaker, anticipator logic in the system opens two redundant solenoid valves in the hydraulic oil system, causing the turbine governor valves and interceptor valves to close in anticipation of overspeed.

B. OPC—Auxiliary Speed Channel (103% overspeed)

An auxiliary speed channel that shares none of the components of the overspeed systems described below (except the power supplies that are redundant) receives frequency pulses generated by a separate reluctance pickup and converts them to a proportional analog signal for control of overspeed. If the turbine overspeed exceeds 103 percent of normal rated speed, this system will open the two redundant solenoid valves in the hydraulic oil system mentioned above and close the turbine governor and interceptor valves (if they have not already been closed by the anticipator).

C. Mechanical Overspeed Trip (110-111% overspeed)

At about 111 percent of rated speed the mechanical overspeed trip system will cause the flow of steam into the turbine to cease. This mechanism consists of a trip weight that is carried in a transverse hole in the rotor extension shaft with its center of gravity offset from the axis of rotation, so that centrifugal force tends to move it outward at all times. The trip weight is held in position by a compression spring. If the speed of the turbine increases to a speed above the setpoint, the centrifugal force overcomes the compression of the spring, and the weight moves outward and strikes the trip trigger, which initiates a sequence of events causing all valves capable of admitting steam to the turbine (that is, the throttle, governor, reheat stop, and interceptor valves and extraction nonreturn valves) to close.

D. Electrical Overspeed Trip (110-111% overspeed)

Another method of tripping the turbine on overspeed is provided by the primary speed channel, which receives a continuous turbine speed signal from a variable reluctance transducer mounted at the turbine shaft. (This primary speed channel is the one used by the normal governing system but is separate from the auxiliary speed channel mentioned above.) The transducer output is converted to a precise d-c signal with a level proportional to turbine speed. At 111 percent of turbine speed, this system operates the solenoid trip located on the emergency trip block. Actuation of the solenoid trip will initiate a sequence of events causing all valves capable of admitting steam to the turbine to close.

2. Excerpt from VEPCO Testimony on P2 and P3 and Turbine Inspection, Introduced into Evidence Following App. Tr. 19, at pp. 6-8.

IV. INSPECTION AND TESTING

Detailed procedures for testing the overspeed trip system have been developed for North Anna Units 1 and 2, as stated in the FSAR:

1. A thorough check of the throttle and governor valve stem freedom will be made once each week.

2. A thorough check of the reheat stop and interceptor valve stem freedom will be made once each week.

3. Motor-driven oil pumps and controls will be tested once each month. During normal operation this procedure involves testing the bearing oil pump pressure switch by reducing the pressure through the bleed-off valve to a point where the switch makes contact, completing the circuit to the AC pump motor. The emergency oil pump pressure switch can be tested by continuing to reduce the pressure to the point where this switch makes contact and operates the emergency oil pump. The actual pressure at which each switch operates is compared to the prescribed setting.

4. The following oil trip test devices located at the governor-end pedestal will be tested prior to each turbine startup (if they have not already been tested the previous week):

- a. Overspeed trip oil test device
- b. Low vacuum trip
- c. Low bearing oil pressure trip
- d. Thrust bearing oil trip

5. The overspeed trip will be tested by overspeeding the turbine-generator unit during each refueling.

The Technical Specifications for North Anna Unit 1 include certain inspection requirements:

4.7.1.7 The structural integrity of the steam turbine assembly shall be demonstrated;

- a. At least once per 40 months, during shutdown, by a visual and surface inspection of the steam turbine assembly at all accessible locations, and
- b. At least once per 10 years, during shutdown, by disassembly of the turbine and performing a visual, surface and volumetric inspection of all normally inaccessible parts.

....

4.7.1.8.2 The above required turbine overspeed protection system shall be demonstrated OPERABLE;

- a. At least once per 7 days by cycling each of the following valves through one complete cycle.
 1. 4 Turbine Throttle valves
 2. 4 Turbine Governor valves
 3. 4 Turbine Reheat Stop valves
 4. 4 Turbine Reheat Intercept valves
- b. At least once per 31 days by direct observation of the movement of each of the above valves through one complete cycle.
- c. At least once per 18 months, by performance of CHANNEL CALIBRATION on the turbine overspeed protection instruments.
- d. At least once per 40 months, by disassembly of at least one of each of the above valves and performing a visual and surface inspection of all valve seats, discs and stems and verifying no unacceptable flaws or corrosion.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Herbert Grossman, Chairman
Robert L. Holton
J. Venn Leeds

In the Matter of

Docket No. 50-367
(Construction Permit
Extension)

NORTHERN INDIANA PUBLIC
SERVICE COMPANY
(Bailly Generating Station,
Nuclear-1)

May 6, 1982

The Licensing Board issues a final order terminating this construction permit extension proceeding. The Board modifies its proposed order (LBP-82-29, 15 NRC 762) by assigning the NRC Staff a greater role as independent reviewer of the implementation of the site restoration plan, and by allowing the parties more frequent inspections of the site restoration, the presence of experts at inspections and testing at inspections.

MEMORANDUM AND ORDER
(Terminating Proceeding Under Specified Conditions)

MEMORANDUM

On April 12, 1982, the Licensing Board issued a proposed order that would terminate the proceeding. The parties were given 12 days from service of the Memorandum and Order to file objections and/or requested modifications. The Northern Indiana Public Service Company (NIPSCO) indicated it would not file objections or requested modifications. NRC Staff and Porter County Chapter Intervenors (PCCIs) filed objections and requests for modifications, which the Board has considered. For the reasons stated below, we are issuing a modified order adopting Staff's requested modifications and many of those proposed by PCCIs.

Staff requested modifications that would place it more in the role of an independent reviewer of NIPSCO's implementation of the site restoration plan than envisaged under our proposed order. Staff would require that NIPSCO first report to Staff on the progress of the site restoration and possible non-completion by the specified completion date before Staff issues its reports, and that all modifications to the site restoration plan be subject to the approval of Staff.

We agree that our proposed order was not reflective enough of the Staff's role of independent reviewer, and that all of the modifications proposed by Staff are desirable.

PCCIs' major objection to our proposed order is that it would terminate the proceeding at this juncture, rather than require NIPSCO to restore the site before the proceeding is terminated. We see nothing in PCCIs' submittal that had not been previously considered or adequately addressed in our prior order, or would require a reversal of our decision to terminate at this juncture. We reaffirm our decision to terminate.

PCCIs requested modifications that would require more detail in the periodic reports required of NIPSCO and Staff, permit more frequent inspections, permit the presence of experts at inspections, and permit testing activity at inspections.

We agree that more detail in the periodic reports would be desirable but do not agree that it should extend to a disclosure of contracts or purchase orders entered into or to be let by NIPSCO. We would add an inspection at an approximate mid-point of site restoration. In order to avoid a winter inspection that would most likely be unprofitable, our choice was limited to the late fall of 1982 or the spring of 1983. We have chosen the latter.

We agree that the presence of experts and reasonable testing activities at the inspections are desirable.

ORDER

For all of the foregoing reasons and based upon a consideration of the entire record in this matter, it is, this 6th day of May 1982

ORDERED

1. That NIPSCO's motion to terminate proceeding is granted and its application for extension of construction permit is deemed withdrawn on the conditions set forth in the following paragraphs;

2. That Construction Permit No. CPPR-104 is deemed to have expired without further opportunity to NIPSCO to revive such permit;

3. That neither the expiration of Construction Permit No. CPPR-104, nor the termination of this proceeding (or any matters that have transpired during this proceeding), shall preclude NIPSCO from applying for a new construction permit in the future with regard to the Bailly site;

4. That NIPSCO must implement the revised site restoration plan agreed to by NIPSCO, NRC Staff, and PCCIs, and approved by the Board by Order dated January 29, 1982;

5. That NIPSCO must begin implementation of that plan no later than August 1, 1982;

6. That NIPSCO must complete the implementation of that plan no later than September 1, 1983;

7.a. That NIPSCO shall send a report to each of the individuals and organizations currently on the service list, on June 1, 1982 and the first day of each third month thereafter, and on the completion date of the site restoration (but no later than September 1, 1983, if not completed), reporting on the progress of the site restoration, to include a detailed description of all site work done; a detailed description of all site work remaining to be done; an estimate of the percentage of completion of site restoration, together with the basis for the estimate; and, an estimated completion date for site restoration.

b. That the Staff send a report presenting its review of the items addressed in NIPSCO's report to each of the individuals and organizations on the service list within 20 days after service of NIPSCO's report.

8. That, on April 15, 1983 and at the completion of the site restoration (but no later than September 1, 1983, if not completed), NIPSCO is to give notice of, and arrange for, an inspection of the site (under reasonable conditions) between 10 and 20 days thereafter, at which each party, if an individual, or one representative from each organizational party (even if intervening jointly with other organizations), along with one expert for each such party (if the party so desires), may be present;

9. Each party participating in the site inspections may conduct reasonable inspection and testing activities which do not interfere with ongoing site restoration. If the parties cannot agree on what inspection or testing activity is reasonable, the NRC Staff will make the final decision;

10. That, in the event that NIPSCO has not completed its site restoration by September 1, 1983, NIPSCO shall file a complete report with the NRC Staff, with copies to individuals and organizations currently on the service list, describing the status of the site restoration, giving the reasons why the site restoration has not yet been completed, and indicating what steps it plans to take to complete the site restoration. Within 30 days thereafter, the NRC Staff shall file a report with the Commission indicating the status of site restoration and recommending such future action as may be necessary to compel the completion of site restoration;

11. That there be no modifications to the site restoration plan or the other conditions herein imposed upon NIPSCO with regard to site restoration without the approval of the NRC Staff and a representative of the Business and Professional People for the Public Interest (BPPI), which shall be deemed to have succeeded to the interests of PCCIs upon termination of this proceeding (or a representative for PCCIs if the proceeding has not yet been terminated);

12. That the conditions imposed by this termination order be considered as an obligation assumed by NIPSCO in consideration of the Commission's terminating this proceeding prior to the restoration of the site, enforceable by the Commission and the courts; and

13. That, in accordance with 10 CFR §§2.760, 2.762, 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 thirty (30) days after issuance, subject to any review pursuant to the above-cited Rules of Practice. Exceptions to this Memorandum and Order may be filed by any party within ten (10) days after service. A brief in support of the exception 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. 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.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**Herbert Grossman, Chairman
ADMINISTRATIVE JUDGE**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Administrative Law Judge

James A. Laurenson

In the Matter of

**HOUSTON LIGHTING & POWER
COMPANY, et al.**
(South Texas Project, Units 1
and 2)

**Docket Nos. 50-498A
50-499A**

**TEXAS UTILITIES GENERATING
COMPANY, et al.**
(Comanche Peak Steam
Electric Station, Units 1
and 2)

**Docket Nos. 50-445A
50-446A**

May 6, 1982

The Administrative Law Judge approves a settlement of all outstanding antitrust issues and dismisses the proceeding.

ANTITRUST PROCEEDINGS: SETTLEMENT

Where no party to an antitrust proceeding opposes a settlement proposal, consisting of the attachment of agreed conditions to operating licenses, the settlement will be approved as being fair and reasonable and in the public interest.

**MEMORANDUM AND ORDER
APPROVING SETTLEMENT AGREEMENTS AND PROPOSED LICENSE
CONDITIONS AND DISMISSING PROCEEDING**

Jurisdiction and Procedural History

On December 12, 1974, the Commission issued a construction permit for Comanche Peak Steam Electric Station, Units 1 and 2 (hereinafter

"Comanche Peak"). On January 14, 1976, the Commission issued a construction permit for South Texas Project, Units 1 and 2 (hereinafter "South Texas"). In both cases the Attorney General advised the Commission that there was no need for an antitrust hearing. Thereafter, on June 4, 1976, Central Power and Light Company, one of the applicants in South Texas, filed a request for hearing on antitrust issues in that matter. On June 15, 1977, the Commission found "changed circumstances" in South Texas and requested further antitrust advice from the Attorney General. On February 21, 1978, the Attorney General advised the Commission that an antitrust hearing should be held in South Texas. On June 26, 1978, the Commission again found "changed circumstances" in Comanche Peak and requested further antitrust advice from the Attorney General. On August 1, 1978, the Attorney General advised the Commission that an antitrust hearing should be held in Comanche Peak. In both cases, the Commission ordered antitrust proceedings to be commenced. Numerous cities, utilities, and electric cooperatives intervened in these two proceedings. The Department of Justice (hereinafter "Justice") and the Nuclear Regulatory Commission Staff (hereinafter "Staff") participated in both proceedings. The two proceedings were consolidated for discovery in 1978 and for hearing in 1980. Discovery took place in 1979 and 1980. On September 14, 1980, all of the applicants in both proceedings, Justice and the Staff, submitted two sets of proposed license conditions representing a settlement of these matters acceptable to the applicants, Justice, and Staff. The only intervenor which opposed the settlement and proposed license conditions was the Public Utilities Board of the City of Brownsville, Texas (hereinafter "Brownsville"). Thereafter, on December 24, 1980, Conformed Settlement License Conditions were filed.

A Conference of Counsel was held on April 13, 1982. Again, all parties to both of these matters, except Brownsville, reiterated their support for the settlement or, in any event, their lack of opposition to it. Brownsville was directed to respond to four specific questions concerning its opposition to the settlement. On April 22, 1982, Brownsville responded that it no longer opposed the proposed settlement and did not want the settlement to be rejected. Thus, there is no opposition to the proposed settlement and Conformed License Conditions.

Test for Settlement Approval

The Commission's Rules of Practice encourage settlement of contested proceedings as follows:

"The Commission recognizes that the public interest may be served through settlement of particular issues in a proceeding.

Therefore, to the extent that it is not inconsistent with hearing requirements in section 189 of the Act (42 U.S.C. 2239), the fair and reasonable settlement of contested initial licensing proceedings is encouraged. It is expected that the presiding officer and all of the parties to those proceedings will take appropriate steps to carry out this purpose." 10 CFR §2.759.

As noted in the preceding section, this consolidated proceeding has a long and arduous history punctuated by adversary relationships of competent counsel. Justice, which initially recommended that a hearing be held on antitrust issues in both matters, is now in accord with the settlement. Interested parties have been afforded the opportunity to intervene. All intervenors were given the opportunity to object to the settlement and proposed license conditions. None did so. Since no party to this consolidated proceeding opposes the settlement or proposed license conditions, it would not be fruitful or in the public interest to dissect the settlement agreements in search of an antitrust issue for hearing. Hence, I find that based upon the foregoing, the proposed settlement and license conditions are fair and reasonable and are in the public interest. Accordingly, the settlement is approved and the conditions shall be attached to the operating license. Since no further relief is requested by any party to this consolidated proceeding, this action is **DISMISSED**.

WHEREFORE, IT IS ORDERED this 6th day of May, 1982, that the settlement agreements are hereby **APPROVED**.

IT IS FURTHER ORDERED that the Conformed License Conditions for Comanche Peak attached hereto and incorporated herein, marked as "Appendix A-Comanche Peak" shall be immediately effective and shall be attached to the operating license of Comanche Peak.

IT IS FURTHER ORDERED that the Conformed License Conditions for South Texas, attached hereto and incorporated herein, marked as "Appendix B-South Texas" shall be immediately effective and shall be attached to the operating license of South Texas.

IT IS FURTHER ORDERED that this consolidated proceeding is **DISMISSED**.

James A. Laurenson
ADMINISTRATIVE LAW JUDGE

Appendix A - Comanche Peak

**CONFORMED
December 1980**

**LICENSE CONDITIONS FOR COMANCHE PEAK STEAM ELECTRIC
STATION UNITS 1 AND 2**

- D. (1) The following definitions apply to paragraph 3.D.(2):
- (a) "Applicants" means severally and jointly Texas Utilities Generating Company, Dallas Power & Light Company, Texas Electric Service Company, Texas Power & Light Company, Texas Utilities Company and each other subsidiary, affiliate or successor company now or hereafter engaged in the generation, transmission and/or the distribution of electric power in the State of Texas.
 - (b) "North Texas Area" means the following Texas counties: Anderson, Andrews, Angelina, Archer, Bastrop, Baylor, Bell, Borden, Bosque, Brown, Burnet, Cherokee, Clay, Coke, Collin, Comanche, Cooke, Coryell, Crane, Culberson, Dallas, Dawson, Delta, Denton, Eastland, Ector, Ellis, Erath, Falls, Fannin, Fisher, Freestone, Gaines, Glasscock, Grayson, Henderson, Hill, Hood, Hopkins, Houston, Howard, Hunt, Jack, Johnson, Kaufman, Kent, Lamar, Lampasas, Leon, Limestone, Loving, Lynn, Martin, McLennan, Midland, Milam, Mitchell, Montague, Nacogdoches, Navarro, Nolan, Palo Pinto, Parker, Pecos, Rains, Reagan, Red River, Reeves, Rockwall, Rusk, Scurry, Schackelford, Smith, Somervell, Stephens, Sterling, Tarrant, Terry, Tom Green, Travis, Upton, Van Zandt, Ward, Wichita, Wilbarger, Williamson, Winkler, Wise, Wood, and Young.
 - (c) "Entity" means an electric utility which is a person, a private or public corporation, a governmental agency or authority, a municipality, a cooperative, or an association owning, operating or contractually controlling, or proposing in good faith to own, operate or contractually control, facilities for generation of electric power and energy; provided, however, that as used in paragraphs 3.D.(2)(a), 3.D.(2)(b), 3.D.(2)(g), 3.D.(2)(i), 3.D.(2)(j)(a) and (b), 3.D.(2)(k), 3.D.(2)(1) and 3.D.(2)(m), "Entity" means an electric utility which is a person, a private or public corporation, a governmental agency or authority, a

municipality, a cooperative, or an association owning or operating, or proposing in good faith to own or operate, facilities for generation, transmission and/or distribution of electric power and energy.

- (d) "Entity in the North Texas Area" means an Entity which owns or operates facilities for the generation, transmission and/or distribution of electric power in any area within the North Texas Area.
 - (e) "Bulk Power" means the electric power and/or electric energy supplied or made available at transmission or subtransmission voltages.
 - (f) "Costs" means all appropriate operating and maintenance expenses and all ownership costs where applicable.
 - (g) The terms "connection" and "interconnection" are used interchangeably.
- (2) The Applicants defined in Paragraph 3.D.(1)(a) are subject to the following antitrust conditions:
- (a) The Applicants shall afford an opportunity to participate in the Comanche Peak Steam Electric Station, Units 1 and 2, for the term of the instant license, or any extension or renewal thereof, to any Entity(ies) in the North Texas Area making a timely request therefor, through a reasonable ownership interest in such unit(s) on reasonable terms and conditions and on a basis that will fully compensate Applicants for their costs. It is understood that any request received prior to December 1, 1973, shall be deemed to be timely. In connection with such participation, the Applicants also will interconnect with and offer transmission service as may be required for delivery of such power to such Entity(ies) at a point or points on the Applicants' system on a basis that will fully compensate the Applicants for their costs including a reasonable return on investment. Notwithstanding the December 1, 1973 date appearing hereinabove, the Applicants' offer of participation in Comanche Peak, Units 1 and 2, to Tex-La Electric Cooperative of Texas, Inc. shall not obligate the Applicants, by virtue of such offer, to offer an opportunity to participate in Comanche Peak, Units 1 and 2, to any other Entity.
 - (b) The Applicants, as long as they are members of the Texas Interconnected Systems (TIS), shall support reasonable requests by Entities in the North Texas Area having generating capacity for membership in TIS. The Applicants shall also

- propose and actively support, as long as they are members thereof, the creation of one or more additional classifications of TIS membership based on non-discriminatory criteria to afford access to data, studies and recommendations to all Entities in the North Texas area who desire membership. The Applicants shall also support requests by qualified Entities in the North Texas Area for membership in any other electric utility planning or operating organization or of which the Applicants are members (other than one involving only the Applicants). The Applicants shall share information with other Entities with respect to, and shall, with other such entities through any electric utility planning organizations (other than one involving only the Applicants) of which the Applicants are members, conduct and/or participate in joint studies and planning of future generation, transmission and related facilities; provided, however, this condition shall not obligate the Applicants to conduct or participate in such joint studies or joint planning unless (1) the studies or planning are requested and conducted in good faith and are based on reasonably realistic and reasonably complete data or projections, (2) the studies or planning are reasonably justified on the basis of sound engineering principles, (3) appropriate protection is accorded proprietary or other confidential business and financial information, and (4) the costs for such studies or planning are allocated on a fair and equitable basis.
- (c) The Applicants will connect with, coordinate reserves, and sell, purchase or exchange emergency and/or scheduled maintenance bulk power with any Entity(ies) in the North Texas Area on terms that will provide for the Applicants' costs, including a reasonable return on investment, in connection therewith and allow such Entity(ies) full access to the benefits of such reserve coordination.
- (d) Emergency service and/or scheduled maintenance service to be provided by each party shall be furnished to the fullest extent available from the supplying party and desired by the party in need. If requested, Applicants shall exchange maintenance schedules with any Entity in the North Texas Area. The Applicants and each such Entity(ies) shall provide to the other emergency service and/or scheduled maintenance service if and when available to the extent they can do so without unreasonably impairing service to their customers including other electric systems to whom they have firm

commitments. Any curtailment or refusal to provide such emergency and/or scheduled maintenance service shall be on a non-discriminatory basis.

- (e) The Applicants and the other party(ies) to a reserve sharing arrangement shall from time to time jointly establish the minimum reserves to be installed and/or provided under contractual arrangements as necessary to maintain in total a reserve margin sufficient to provide adequate reliability of power supply to the interconnected systems of the parties in accordance with good industry practice as developed in the area. Unless otherwise agreed upon, minimum reserve requirements shall be calculated as a percentage of each party's estimated net peak load demand (taking into account firm sales and firm purchases). No party to the arrangement shall be required to maintain greater reserves than the percentage which results for the aforesaid calculation. The reliability of power delivered into TIS-ERCOT over DC asynchronous connections shall not be treated differently by the Applicants, for purposes of spinning and installed reserve calculations and requirements, than would be the case if such power originated within TIS-ERCOT. Outages on DC asynchronous connections shall be treated by the Applicants the same as losses of generation within TIS-ERCOT. The Applicants agree to support the adoption of principles involving DC asynchronous connections contained in this paragraph within any TIS or ERCOT organization.
- (f) The parties to such a reserve sharing arrangement shall provide such amounts of spinning reserves as may be equitable and adequate to avoid the imposition of unreasonable demands on the other party(ies) in meeting the normal contingencies of operating its (their) system(s). However, in no circumstances shall such reserve requirement exceed the installed reserve requirement.
- (g) Interconnections with any Entity will not be limited to low voltages when higher voltages are requested and are available from the Applicants' installed facilities in the area where a connection is desired, when the proposed arrangement is found to be technically and economically feasible. Control and telemetering facilities shall be provided as required for safe and prudent operation of the interconnected systems.
- (h) Interconnection and coordination agreements shall not embody any restrictive provisions pertaining to intersystem co-

ordination. Good industry practice as developed in the area from time to time (if not unreasonably restrictive) will satisfy this provision.

- (i) The Applicants shall participate in and facilitate the exchange of bulk power by transmission over the Applicants' transmission facilities between or among two or more Entities in the North Texas Area with which the Applicants are connected, and between any such Entity(ies) and any Entity(ies) outside the North Texas Area between whose facilities the Applicants' transmission lines and other transmission lines, including any direct current (asynchronous) transmission lines, form a continuous electrical path; provided, that (i) permission to utilize such other transmission lines has been requested by the proponent of the arrangement, (ii) the arrangements reasonably can be accommodated from a functional and technical standpoint, and (iii) any Entity(ies) requesting such transmission arrangements shall have given Applicants reasonable advance notice of its (their) schedule and requirements. Such transmission shall be on terms that fully compensate the Applicants for their costs including a reasonable return on investment; provided, however, that such transmission services and the rates to be charged therefore shall be subject to any regulatory agency(ies) having jurisdiction thereof. The Applicants shall not refuse to provide such transmission service merely because the rates to be charged therefore are the subject of dispute with such Entity. The Applicants shall not be required to enter into any arrangement which would unreasonably impair system reliability or emergency transmission capacity, it being recognized that while some transmission may be operated fully loaded, other transmission may be for emergency use and operated either unloaded or partially loaded. (The foregoing applies to any Entity(ies) to which the Applicants may be connected in the future as well as those to which they are now connected).
- (j) (a) The Applicants shall include in their planning and construction programs sufficient transmission capacity as required for the transactions referred to in paragraphs (i) and (k), provided any Entity(ies) in the North Texas Area gives the Applicants sufficient advance notice as may be necessary to accommodate its (their) requirements from a functional and technical standpoint and that such Entity(ies) fully compensates the Applicants for their costs

including a reasonable return on investment. The Applicants shall not be required to construct transmission facilities if construction of such facilities is infeasible, or if such would unreasonably impair system reliability or emergency transmission capacity. In connection with the performance of their obligations above, the Applicants shall not be foreclosed from requiring a reasonable contribution in aid of construction or from making arrangements for coordinated construction of future transmission lines such that each of the parties to the transaction would own an interest in or a segment of the transmission addition in proportion to its share of the cost of the addition. Any such contribution made in aid of construction or ownership interest shall be properly credited in determining any wheeling charges. If the Applicants engage in joint ownership of transmission lines with any other Entity, they shall not refuse to engage in similar transactions in comparable circumstances with other Entities, subject to the provisions limiting the Applicants' obligations above.

- (j) (b) Applicants shall provide other Entities with reasonable access to any future interstate interconnection facilities which Applicants may own, on terms and conditions comparable to the provisions of paragraph D.2(i) hereof, and subparagraph (a) of this paragraph.
- (k) The Applicants shall, upon reasonable advance notice, sell full and partial requirements bulk power to requesting Entities in the North Texas Area having, on the date of this license, non-aggregated generating capacity of less than 200 MW (including no generating capacity) under reasonable terms and conditions which shall provide for recovery of Applicants' costs, including a reasonable return on investment. The Applicants shall not be required to make any such sale if they do not have available sufficient bulk power or adequate transmission to provide the requested service or if the sale would impair their ability to render adequate and reliable service to their own customers or their ability to discharge prior commitments.
- (l) (a) In connection with the performance of their obligations herein and subject to the provisions of this paragraph, the Applicants will not disconnect from or refuse to connect their then-existing or proposed facilities with the facilities of any Entity, used or proposed to be used for the trans-

mission of electric energy in interstate commerce by reason of the interstate character of such facilities, and the Applicants will not prevent any Entity with which they maintain connection from establishing, maintaining, modifying, or utilizing a connection with facilities used or proposed to be used for the transmission of electric energy in interstate commerce by reason of the interstate character of such facilities, provided that, anything in these license conditions to the contrary notwithstanding (but subject to paragraph 1(b) and 1(d) below), any Entity seeking to establish, maintain, modify or utilize any connection which could affect the nonjurisdictional status of the Applicants under the Federal Power Act shall have filed an application with and used its best efforts to obtain an order from the Federal Energy Regulatory Commission, applicable to the Applicants under Sections 210, 211, and 212 of such Act, requiring the establishment, maintenance, modification or utilization of such connection. In the event that an Entity files an Application pursuant to this subparagraph, the Applicants agree that they will not unreasonably oppose any such application. In the event such application is denied by a valid order of the Federal Energy Regulatory Commission, any continuing refusal by the Applicants to establish, maintain, modify or utilize such connection with such Entity shall be subject to review by the NRC in accordance with the Atomic Energy Act of 1954, as amended, and the rules and regulations thereunder, to determine whether any such refusal would create or maintain a situation inconsistent with the antitrust laws or the policies thereunder in accordance with the standards set forth in Section 105 of such Act; provided that all factual determinations by the FERC on any cost or system reliability reason(s) for any such refusal shall not be subject to redetermination by the NRC. The burden of proof will be on the Applicants in such NRC proceeding.

- (b) Applicants shall not enter into or maintain any agreement or understanding with any other Entity(ies) to refuse to deal with another Entity(ies) with the purpose of maintaining a non-jurisdictional status under the Federal Power Act, and in the event that Applicants refuse to make an interconnection with or choose to disconnect from any Entity(ies), such decision and/or action by the Applicants

will be undertaken unilaterally, not jointly, and without consultation with any other Entity(ies), provided, however, that after Applicants decide to undertake such action, they may notify any affected Entity.

- (c) In the event that an Entity files an application pursuant to subparagraph (a) of this paragraph solely by reason of Applicants' desire to maintain their non-jurisdictional status under the Federal Power Act, Applicants agree to pay such Entity's reasonable expenses in connection with such application and the ensuing proceeding,¹ provided, however, that Applicants shall not be required to pay for any expenses of such Entity if that Entity's application is denied by FERC for reasons advocated by Applicants at FERC, and provided further, that Applicants shall not be required to pay for any expenses of such Entity which that Entity would have incurred had it not filed an application solely by reason of Applicants' desire to maintain their non-jurisdictional status under the Federal Power Act.
- (d) Nothing in these License Conditions shall impair the right of the Department of Justice or any other Entity, public or private, to file an antitrust action in any Federal Court in the event any Applicant refuses to establish, maintain, modify or utilize any connection with any Entity(ies), provided, that nothing herein shall preclude any Applicant from raising any legal or equitable defense that may be available to it.
- (m) Applicants agree to use their best efforts to amend any agreements with all Entities to ensure that such agreements are not inconsistent with paragraphs 3.D.(2)(1)(a) and (b) above.
- (n) The Applicants will, in accordance with applicable law, allow ownership participation in future nuclear generating facilities which they may construct, own, and operate in the State of Texas on conditions similar to these License Conditions.
- (o) Applicants shall use their best efforts to modify the Offer of Settlement filed in FERC Docket No. EL79-8 to include each of the undertakings set forth in the letter agreement among Applicants, Central & South West Corporation, Houston

¹ This obligation shall not apply to the expenses of the Central & South West Corporation or Houston Industries or any of their respective subsidiaries, including, but not limited to, the expenses of Central & South West Corporation and any of its subsidiaries incurred in FERC Docket No. EL79-8.

Lighting & Power Company and the FERC Staff dated September 11, 1980; Applicants shall thereafter use their best efforts to secure approval thereof by the FERC, and shall abide by any valid order(s) of the FERC issued pursuant to the Offer of Settlement. Nothing herein shall preclude the Department of Justice from instituting or intervening in any proceeding at FERC, including FERC Docket No. EL79-8, and from presenting such arguments and evidence that it deems appropriate.

- (p) The foregoing conditions shall be implemented i) in a manner consistent with applicable Federal, state and local statutes and regulations and ii) subject to any regulatory agency having jurisdiction. Nothing herein shall preclude the Applicants from seeking an exemption or other relief to which they may be entitled under applicable law or shall be construed as a waiver of their right to contest the applicability of the license conditions with respect to any factual situation.

Appendix B - South Texas

**CONFORMED
December 1980**

**LICENSE CONDITIONS FOR SOUTH TEXAS PROJECT
UNITS NOS. 1 AND 2**

- I. A. The following definitions apply to paragraph I.B:
- (1) "Applicants" means severally and jointly Houston Lighting and Power Company (HLP), Central Power and Light Company (CPL), City Public Service Board of San Antonio (CPSB), and the City of Austin Electric Utility Department (COA) and any of their respective successors, assignees, or subsidiaries engaged in the generation, transmission or the distribution of electric power. Where a license condition is directed to a specific Applicant, that Applicant is identified.
 - (2) "South Texas Area" means (a) those counties in which Applicants serve electric customers at wholesale or retail, and (b) those other areas, if any, surrounded by the areas in (a) above.
 - (3) "Entity" means an electric utility which is a person, a private or public corporation, a governmental agency or authority, a municipality, a cooperative, or an association of any of the foregoing owning, operating, or contractually controlling, or proposing in good faith to own, operate, or contractually control facilities for generation, transmission or distribution of electric power and energy for the purpose of providing electric utility service.
 - (4) "Bulk Power" means the electric power and/or electric energy supplied or made available at transmission or subtransmission voltages.
 - (5) "Costs" means all appropriate operating and maintenance expenses and all ownership costs where applicable.
 - (6) The terms "connection" and "interconnection" are used interchangeably.
- B. The Applicants defined in Paragraph I.A.(1) are subject to the following antitrust conditions:
- (1) (a) CPL shall afford to the Public Utilities Board of the City of Brownsville an opportunity to participate in the South Texas Project, Units 1 and 2, on reasonable terms and conditions and in accordance with the South Texas Project Participation Agreement and on a basis that will fully

compensate CPL for its actual costs, provided that Brownsville must enter into a firm commitment to acquire the ownership interest made available to it by the terms of this paragraph no later than January 1, 1983. The ownership interest which CPL shall make available to Brownsville shall be computed by multiplying CPL's Generation Entitlement Share in STP Units 1 and 2 by the ratio of Brownsville's peak demand for 1980 to CPL's peak demand for 1980. In the event Brownsville obtains an ownership interest from any Applicant other than CPL, the ownership interest which CPL must make available to Brownsville hereunder shall be reduced by one megawatt for each megawatt in excess of 12 megawatts that Brownsville acquires from other Applicants. Applicants shall not exercise any rights of first refusal over Brownsville's efforts to participate in the South Texas Project to the extent of the first 50 MW of such ownership share.

- (b) CPL shall afford Brownsville reasonable transmission services to enable it to obtain delivery of power from the STP, provided that CPL is fully compensated for its costs of such transmission services plus a reasonable return on investment, and provided further that in the event transmission capacity is not available to provide such transmission services, the provisions of Paragraph I.B.(4) hereof define the extent of the obligation which CPL has with respect to the construction of additional transmission facilities necessary to provide such transmission service.
 - (c) CPL will also afford all reasonable coordination services (including but not limited to reserve sharing, backup power, maintenance power and emergency power) necessary for Brownsville to have effective access to power from STP obtained from CPL, provided that CPL is fully compensated for its costs of providing such coordination services plus reasonable return on investment.
 - (d) Each Applicant shall facilitate where necessary Brownsville's obtaining the participation interests and services specified in paragraphs 1(a), 1(b) and 1(c) above.
- (2) The Applicants, as long as they are members of the Texas Interconnected Systems (TIS) or any other organization which considers the planning for or operations of ERCOT-TIS electric utilities, shall support reasonable requests by Entities in the South Texas Area having generation capacity

for membership in TIS or such other organizations. The Applicants shall also propose and actively support, as long as they are members thereof, the creation of one or more additional classifications of TIS membership, based on non-discriminatory criteria to afford access to data, studies and recommendations to all Entities in the South Texas Area who desire membership. The Applicants shall share information with other Entities with respect to, and shall conduct with other such Entities through any electric utility planning organizations of which the Applicants are members, joint studies and planning of future generation, transmission and related facilities; provided, however, that this condition shall not obligate the Applicants to conduct such joint studies or joint planning unless (1) the studies or planning are requested and carried out in good faith and based on reasonably realistic and reasonably complete data or projections, (2) the studies or planning are reasonably justified on the basis of sound engineering principles, (3) appropriate protection is accorded proprietary or other confidential business and financial information, and (4) the costs for such studies or planning are allocated on a fair and equitable basis.

- (3) Each Applicant shall participate in and facilitate the exchange of bulk power by transmission over its own transmission facilities between or among two or more Entities in the South Texas Area with which the Applicant is connected; and between any such Entity(ies) and any Entity(ies) outside the South Texas Area between whose facilities the Applicant's transmission lines and other transmission lines, including direct current (asynchronous) transmission lines, form a continuous electrical path; provided, that (i) permission to utilize such other transmission lines has been requested by the proponent of the arrangement, (ii) the arrangements reasonably can be accommodated from a functional and technical standpoint, and (iii) any Entity(ies) requesting such transmission arrangements shall have given reasonable advance notice of its (their) schedule and requirements. Such transmission shall be on terms that fully compensate an Applicant for its costs including a reasonable return on investment; provided, however, that such transmission services and the rates to be charged therefor shall be subject to the jurisdiction of the appropriate regulatory agency(ies). Where the rates to be charged are subject to the jurisdiction of an appropriate regulatory author-

ity, the Applicants shall not refuse to provide such transmission services merely because the rate(s) to be charged therefor are the subject of dispute with such Entity(ies). An Applicant shall not be required to enter into any arrangement which would unreasonably impair system reliability or emergency transmission capacity, it being recognized that while some transmission may be operated fully loaded other transmission may be for emergency use and operated either unloaded or partially loaded.

- (4) Each Applicant shall include in its planning and construction programs sufficient transmission capacity as required for the transactions referred to in paragraph I.B.(3) (and I.B.(5) for CPL), provided any Entity(ies) in the South Texas Area gives an Applicant sufficient advance notice as may be necessary to accommodate its (their) requirements from a functional and technical standpoint and that such Entity(ies) fully compensates an Applicant for its costs including a reasonable return on investment.¹ An Applicant shall not be required to construct transmission facilities if construction of such facilities is infeasible, or if such would unreasonably impair system reliability or emergency transmission capacity. In connection with the performance of the obligations above, an Applicant shall not be foreclosed from requiring a reasonable contribution in aid of construction or from making arrangements for coordinated construction of future transmission lines such that each of the parties to the transaction would own an interest in or a segment of the transmission addition in proportion to its share of the cost of the addition. Any such contribution made in aid of construction or ownership interest shall also be properly credited in determining any wheeling charges. If an Applicant engages in joint ownership of transmission lines with any other Entity(ies), it shall not refuse to engage in similar transactions in comparable circumstances with other Entities, subject to the provisions limiting an Applicant's obligations above.
- (5) CPL shall, upon reasonable advance notice, enter into arrangements for the sale of full and partial requirements bulk power pursuant to a filed tariff to any requesting Entity

¹ Nothing in this paragraph shall require CPSB or COA to undertake any action(s) which may be contrary to any state constitutional provision.

having a non-aggregated generating capacity of 200 megawatts or less under reasonable terms and conditions which shall include a provision for CPL to recover its costs of providing such service plus a reasonable return on investment. Such tariff shall not require CPL to enter into any arrangement for such sale(s) if (a) it does not have available sufficient bulk power or adequate transmission to provide the requested service; or (b) the sale would impair CPL's ability to render adequate and reliable service to its own customers or its ability to discharge prior commitments. It is expressly recognized, and such tariff may reflect, that the determination whether sufficient bulk power or adequate transmission is available to accommodate a request for full or partial requirements bulk power will consider and recognize that (1) CPL will be engaging in centralized economic dispatch with its affiliates in accordance with, and pursuant to the requirements of, the Public Utility Holding Company Act of 1935, (2) pursuant to such requirements CPL may first utilize its generating and transmission capability to accomplish such centralized economic dispatch before its generating and transmission capacity is made available for full or partial requirements bulk power sales under the tariff, and (3) if other CSW system capacity becomes available by reason of CPL's participation in such centralized economic dispatch, then such other CSW system capacity will, at the option of CSW, be made available in lieu of CPL's obligation to provide such capacity. Any curtailment of CPL's full or partial requirements sales shall be on a reasonable and non-discriminatory (where possible) basis.

- (6) (a) In connection with the performance of its obligations herein and subject to the provisions of this paragraph, HLP shall not disconnect from or refuse to connect its then-existing or proposed facilities with the facilities of any Entity used or proposed to be used for the transmission of electric energy in interstate commerce by reason of the interstate character of such facilities, and HLP will not prevent any Entity with which it maintains connections from establishing, maintaining, modifying or utilizing a connection with facilities used or proposed to be used for the transmission of electric energy in interstate commerce by reason of the interstate character of such facilities, provided that, anything in these license conditions to the

contrary notwithstanding (but subject to subparagraphs 6(b) and 6(d) below) any Entity seeking to establish, maintain, modify or utilize any connection which could affect the nonjurisdictional status of HLP under the Federal Power Act shall have filed an application with and used its best efforts to obtain an order from the FERC, applicable to HLP under Sections 210, 211 and 212 of such Act, requiring the establishment, maintenance, modification or utilization of such connection. In the event that an Entity files an application pursuant to this subparagraph, HLP agrees that it will not unreasonably oppose any such application. In the event such application is denied by a valid order of the FERC, any continuing refusal by HLP to establish, maintain, modify or utilize such connection with such Entity shall be subject to review by the NRC in accordance with the Atomic Energy Act of 1954, as amended, and the rules and regulations thereunder, to determine whether any such refusal would create or maintain a situation inconsistent with the antitrust laws or the policies thereunder in accordance with the standards set forth in Section 105 of such Act; provided that all factual determinations by the FERC on any cost or system reliability reason(s) for any such refusal shall not be subject to redetermination by the NRC. The burden of proof will be on the HLP in such NRC proceeding.

- (b) HLP shall not enter into or maintain any agreement or understanding with any other Entity(ies) or Applicant to refuse to deal with another Entity(ies) or Applicant(s) with the purpose of maintaining a non-jurisdictional status under the Federal Power Act, and in the event that HLP refuses to make an interconnection with or chooses to disconnect from any Entity(ies), such decision and/or action by HLP will be undertaken unilaterally, not jointly, and without consultation with any other Entity(ies), provided, however, that after HLP decides to undertake such action, it may notify any affected Entity of its decision.
- (c) In the event that an Entity files an application pursuant to subparagraph (a) of this paragraph solely by reason of HLP's desire to maintain its non-jurisdictional status under the Federal Power Act, HLP agrees to pay such Entity's reasonable expenses in connection with such application

and the ensuing proceeding,² provided, however, that HLP shall not be required to pay for any expenses of such Entity if that Entity's application is denied by FERC for reasons advocated by HLP at FERC, and provided further, that HLP shall not be required to pay for any costs or expenses of such Entity which that Entity would have incurred had it not filed an application solely by reason of HLP's desire to maintain its non-jurisdictional status under the Federal Power Act.

- (d) Nothing in these License Conditions shall impair the right of the Department of Justice or any other Entity, public or private, to file an antitrust action in any Federal Court in the event any Applicant refuses to establish, maintain, modify or utilize any connection with any Entity(ies), provided that nothing herein shall preclude any Applicant from raising any legal or equitable defense that may be available to it.
- (7) HLP agrees to use its best efforts to amend any agreements with all Entities to ensure that such agreements are not inconsistent with paragraphs (6)(a) and (6)(b) hereof.
- (8) If Applicants participate in any future nuclear units other than those which are now under construction on for which an application for a construction permit has been filed, they will afford similar participation to Entities in the South Texas Area on a reasonable basis.
- (9) Applicants agree that the reliability of power delivered into TIS-ERCOT over DC asynchronous connections shall not be treated differently by the Applicants, for purposes of spinning and installed reserve calculations and requirements, than would be the case if such power originated within TIS-ERCOT. Outages on DC asynchronous connections shall be treated by the Applicants in the same way as losses of generation within TIS-ERCOT. Applicants agree to support the adoption of principles involving DC asynchronous connections contained in this paragraph within any TIS or ERCOT organization.
- (10) HLP and CPL shall use their best efforts to modify the Offer of Settlement filed in FERC Docket No. EL79-8 to include

² This obligation shall not apply to the expenses of Central and South West Corporation or Texas Utilities Company or any of their respective subsidiaries, including but not limited to the expenses of CSW and any of its subsidiaries incurred in FERC Docket No. EL79-8.

each of the undertakings set forth in the letter agreement among HLP, Central and South West Corporation, Texas Utilities Company and the FERC staff, dated September 11, 1980. HLP and CPL shall thereafter use their best efforts to secure approval thereof by the FERC, and shall abide by any valid order(s) of the FERC issued pursuant to the Offer of Settlement. Nothing herein shall preclude the Department of Justice from instituting or intervening in any proceeding at FERC, including Docket No. EL79-8, and from presenting such arguments and evidence that it deems appropriate.

- (11) The foregoing conditions shall be implemented (1) in a manner consistent with applicable Federal, state and local statutes and regulations, and (2) subject to any regulatory agency having jurisdiction. Nothing herein shall preclude the Applicants from seeking an exemption or other relief to which they may be entitled under applicable law or shall be construed as a waiver of their right to contest the applicability of the license conditions with respect to any factual situation.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**ATOMIC SAFETY AND LICENSING BOARD****Before Administrative Judges:****James L. Kelley, Chairman
Dr. Cadet H. Hand, Jr.
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)****May 14, 1982**

This Initial decision decides the emergency planning issues, the only issues remaining in this case, largely in the Applicants' favor. The Director of Nuclear Reactor Regulation is being authorized to issue full-power licenses for San Onofre Units 2 and 3, subject to certain conditions. The conditions relate to deficiencies in emergency planning for San Onofre, deficiencies that could prove significant if not remedied over the term of the license, but which, if corrected prior to or during the initial phase of full-power operations, would not pose a danger to public health or safety. The Licensing Board retains jurisdiction over an issue concerning arrangements for medical services in order to review and determine the adequacy of remedial actions the Applicants are being directed to take in that area.

**EMERGENCY PLANNING: PLUME EXPOSURE PATHWAY
EMERGENCY PLANNING ZONE**

In determining the boundaries of the plume exposure pathway emergency planning zone pursuant to 10 CFR 50.47(c)(2) local officials may consider local conditions on the basis of personal judgment; they are

not required to commission special studies of local conditions. On the other hand, if a special study of local conditions is commissioned, for example, by the Applicants, local officials may take the results of such a study into account.

EMERGENCY PLANNING: ARRANGEMENTS FOR MEDICAL SERVICES

Offsite emergency response organizations are required by 10 CFR 50.47(b)(12) to develop and stand ready to implement arrangements for medical services for members of the public in the plume exposure pathway emergency planning zone who may be injured in a serious reactor accident. This conclusion is required by the clear balance of relevant considerations, including the language of the regulation, the historical context of its adoption, consistency of interpretation among commercial facilities, and available evidence of need.

EMERGENCY PLANNING: EFFECT OF FEDERAL EMERGENCY MANAGEMENT AGENCY FINDINGS

A Federal Emergency Management Agency finding with respect to an offsite plan carries with it a rebuttable presumption of correctness, whether labelled a "final" or "interim" finding. However, such a presumption would have the effect of deciding a contested issue only in the absence of persuasive contrary evidence.

RULES OF PRACTICE: POST HEARING RESOLUTION OF ISSUES BY THE STAFF

It is not necessary to resolve all contested matters on the record and subject cross-examination. Certain matters may be left for post-hearing resolution by the Staff if the result is not likely to be affected by on-the-record procedures, including cross-examination.

APPEARANCES

Messrs. David R. Pigott, Edward B. Rogin, Samuel B. Casey and John A. Mendez, San Francisco, California, Charles R. Kocher and James A. Beoletto, Rosemead, California, for the Applicants.

Ms. Phyllis M. Gallagher, Anaheim, California, and Charles E. McClung, Jr., Laguna Hills, California, for the Intervenors, GUARD and Carstens, *et al.*

Messrs. Lawrence J. Chandler, Richard K. Hoefling and Donald F. Hassell, Bethesda, Maryland, for the Nuclear Regulatory Commission Staff.

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INITIAL DECISION

I. SCOPE OF DECISION

This Initial Decision decides the emergency planning issues, the only issues remaining in this case, largely in the Applicants' favor.¹ The Director of Nuclear Reactor Regulation is being authorized to issue full-power licenses for San Onofre Units 2 and 3, subject to certain conditions. The conditions relate to deficiencies we find in emergency planning for San Onofre, deficiencies that could prove significant if not remedied over the term of the license, but which, if corrected prior to or during the initial phase of full-power operations, would not pose a danger to public health or safety. This Board is retaining jurisdiction over an issue concerning arrangements for medical services in order to review and determine the adequacy of remedial actions the Applicants are being directed to take in that area.

II. FACTUAL, LEGAL AND PROCEDURAL BACKGROUND

A. Site Location and Nearby Populated Areas.

The San Onofre Nuclear Generating Station is located on a coastal site on the United States Marine Corps Base, Camp Pendleton, California. The site is about forty miles down the coast southeast from Long Beach, and about fifty miles up the coast northwest from San Diego. The site location and surrounding area are shown in Figure 1.

Much of the land area within a ten mile radius of San Onofre has a low population density. This is true of most of Camp Pendleton and of the area in Orange County north of San Clemente. The total population of this area is about 82,000, of whom about 12,000 live on Camp Pendleton.² About 75 percent of the people in that area — some 61,000 — live in the irregular wedge of land northwest of San Onofre between the coast and the borders of the San Diego Freeway (Interstate Highway 5). Most of these people live in the towns of San Clemente and the southern part of San Juan Capistrano. A ten-mile radius line drawn from San Onofre bisects San

¹ In its Partial Initial Decision of January 11, 1982, this Board decided the seismic issues in the Applicants' favor, determined that existing emergency planning was adequate for low-power operations, and authorized issuance of a low-power license for Unit 2. A stay of that decision was subsequently denied by the Appeal Board. *In the Matter of Southern California Edison Co.*, ALAB-673, 15 NRC 688 (1982).

² See Population Distribution by Sector, App. Ex. #132, Appendix A.

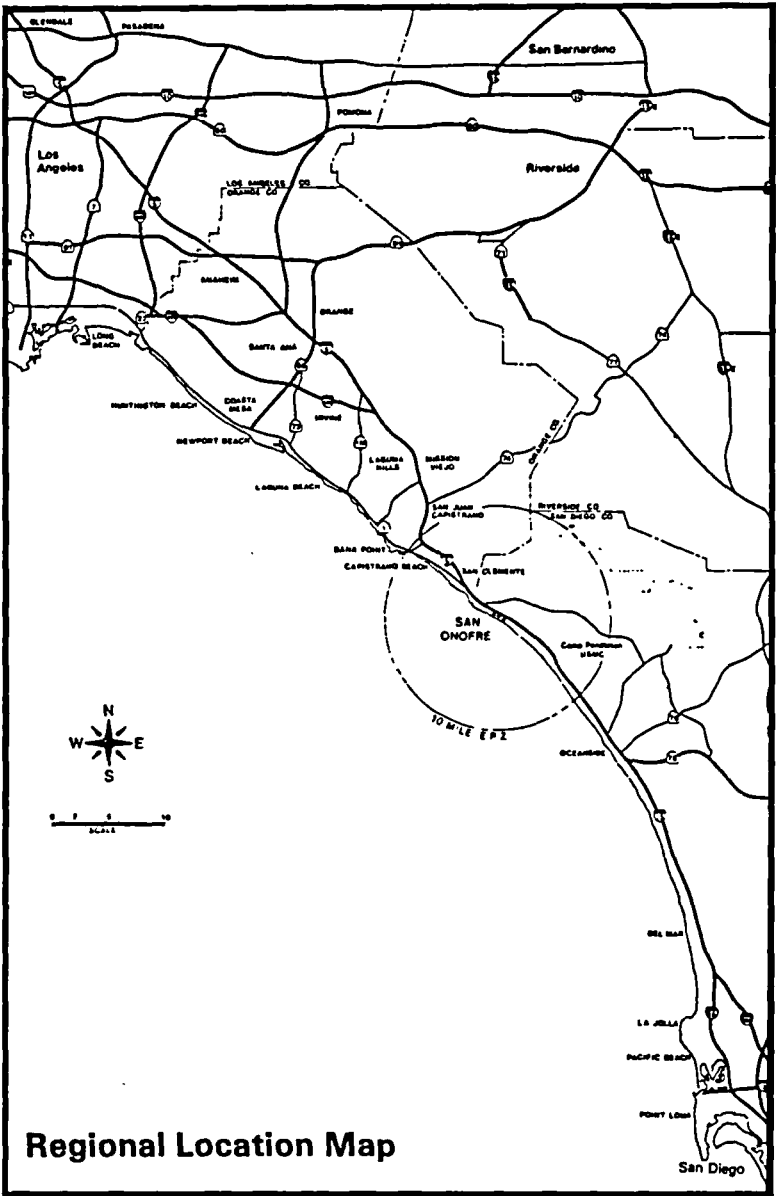


Figure 1

Juan Capistrano. About 30,000 more people live beyond that line in the northern parts of San Juan Capistrano and in the contiguous populated area of Dana Point. In view of the demonstrated capabilities of the Marines on Camp Pendleton of taking care of themselves and their dependents in the event of a radiological emergency,³ the focus of emergency planning attention in this case was on the relatively small but most heavily populated sector about 5 to 12 miles northwest of the San Onofre facility. This sector is depicted in Figure 2.

B. Major Regulatory Requirements.

The Commission's emergency planning rule is intended to provide a comprehensive framework for public protection in the event of a serious radiological emergency.⁴ We provide next a simplified description of the parts of that framework most relevant to the issues in this case, as a perspective for the discussion that follows.

The single most important concept in the Commission's rule is the "plume exposure pathway emergency planning zone" or "plume EPZ."⁵ The plume EPZ is defined as an area "about 10 miles in radius" around the nuclear reactor. Its exact size and configuration are to be determined by local conditions, such as demography and access routes. (10 CFR 50.47(c)(2)) As will be seen, the manner in which the plume EPZ boundary was determined for San Onofre was a contested issue in this case.

The 10-mile radius for the plume EPZ was adopted because in the most significant respects it envelops the anticipated consequences of a range of accidents, from the minor to the most severe. More specifically, as explained in NUREG-0654, the plume EPZ was based on the following considerations:

³ See pp. 1225-1226, below.

⁴ These requirements are set forth in 10 CFR 50.47 and in Appendix E to Part 50. Guidance on how the requirements can be fulfilled is provided by a regulatory guide, NUREG-0654, entitled "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." This document was written by a joint committee of staff from the Commission and the Federal Emergency Management Agency ("FEMA"). It is cited hereafter as "NUREG-0654."

⁵ 10 CFR 50.47(c)(2). The rule also defines a larger zone, the "ingestion pathway emergency planning zone." This zone encompasses a 50-mile radius around the plant and is concerned with radiological contamination to food and drinking water. The ingestion EPZ is generally less significant than the plume EPZ and figured in only one issue in this case. See pp. 1209-1211, below.

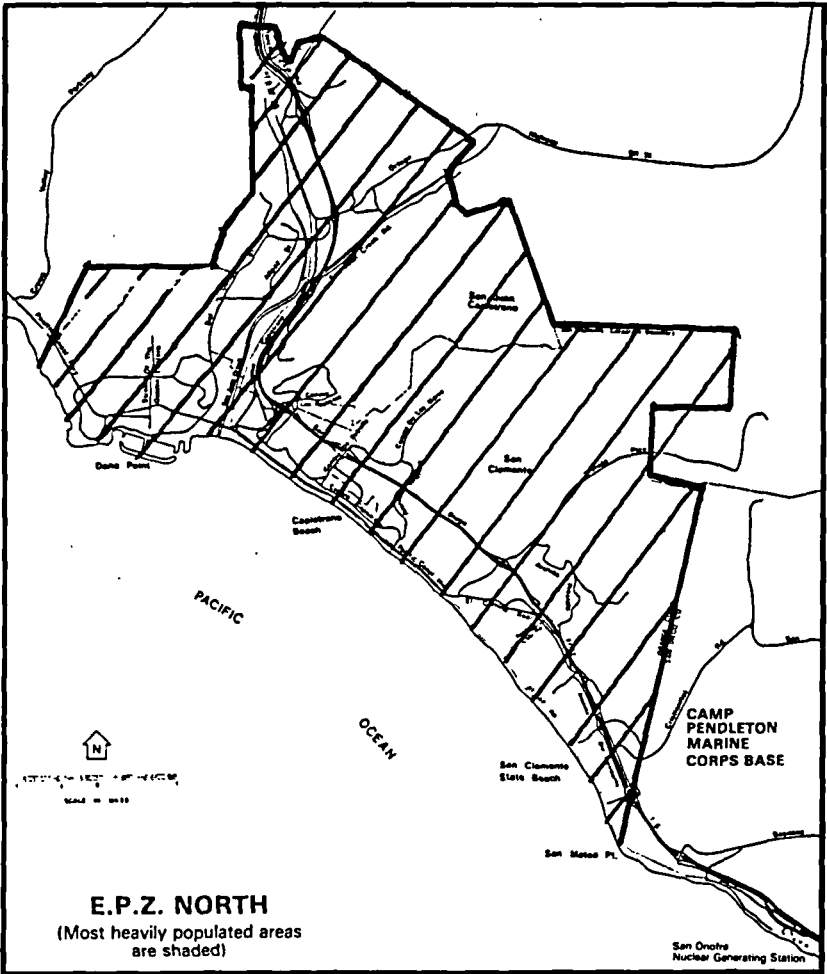


Figure 2

- a. projected doses from the traditional design basis accidents would not exceed Protective Action Guide levels⁶ outside the zone;
- b. projected doses from most core melt sequences would not exceed Protective Action Guide levels outside the zone;
- c. for the worst core melt sequences, immediate life threatening doses would generally not occur outside the zone;
- d. detailed planning within 10 miles would provide a substantial base for expansion of response efforts in the event that this proved necessary.

These considerations explain why certain basic emergency planning requirements are directly related in the rule to the plume EPZ. For example, the licensee must be able to provide early notification of an emergency to the public in the plume EPZ. Development of protective actions, including evacuation, is also focused on people in the plume EPZ.

Emergency plans must meet 16 separate standards set forth in the rule. In addition to the emergency notification and protective action requirements just referred to, these include: clear definition of responsibilities, adequacy of staffing, establishment of a standard emergency classification and action level scheme, prompt communications among response organizations, public information programs, emergency facilities and equipment, capability to monitor and assess offsite radiation, arrangements for medical services, and periodic drills of response capabilities. (10 CFR 50.47(b)(1)-(16))

The licensee's "onsite" plan covers, as the name implies, the site area immediately around the reactor. The onsite plan is required to meet, among other requirements, certain requirements based upon functions unique to the licensee. For example, the onsite plan is to establish an emergency classification and action level scheme based upon facility systems and effluent parameters. In addition, the onsite plan must provide for notifying local response organizations of an emergency. The licensee's onsite plan is initially reviewed for adequacy by the NRC Staff.

The "offsite" plans are drawn up and adopted by nearby city and county officials, usually in close working association with the licensee. The most important offsite plans are those of the large municipalities, counties and possibly other entities located entirely or substantially within the plume EPZ. In this case, those "principal response organizations," as they are called, and which would bear the brunt of implementing plans in an emergency at San Onofre, are (in addition to the Applicants) Orange

⁶ Protective Action Guides have been developed by the Environmental Protection Agency. They prescribe graduated levels of protective action to be taken in response to graduated levels of projected radiation doses.

County, the City of San Clemente, the State Department of Parks and Recreation and the Marines at Camp Pendleton.⁷ The offsite plans focus on implementation of protective action decisions — such as evacuation — made by local officials largely on the basis of information provided by the licensee. The offsite plans are initially reviewed for adequacy by the Federal Emergency Management Agency (“FEMA”)

Finally, in apparent recognition of complexities in the emergency planning requirements, and of a license applicant’s limited control over offsite planning, the rule contains a special provision for exception relief, 10 CFR 50.47(c)(1). Under that provision, failure to meet one or more of the emergency planning standards does not necessarily result in denial of an operating license. Rather, the applicant may show that particular deficiencies “are not significant for the plant in question,” that adequate compensating actions are being taken, or that there are “other compelling reasons to permit plant operation.” In such a case, an operating license may issue, with appropriate conditions attached, if necessary.

C. Procedural Matters.

In early 1977, the utilities filed their application for operating licenses for San Onofre, Units 2 and 3. Following public notice of the application, petitions to intervene and for a hearing were filed by GUARD⁸ and by the Carstens group.⁹ GUARD and the Carstens group presented their case jointly and will be referred to collectively in this opinion as “the Intervenor.”

The Licensing Board initially admitted contentions on various subjects, including three contentions relating to emergency planning.¹⁰ Those emergency planning contentions related primarily to coordination of the different local plans and to the feasibility of evacuating the San Onofre area.

⁷ Separate plans have also been developed by other response organizations, namely the City of San Juan Capistrano and the Capistrano Unified School District. These entities look primarily to Orange County to carry out many important functions, such as evacuation. The San Diego County plan is not of primary importance here because only two small uninhabited parts of that County not inside Camp Pendleton are within the plume EPZ. See Figure 1, p. 1170. above.

⁸ GUARD is an organization some of whose members live near the San Onofre facility. Although their initial petition for intervention expressed interest in a range of subjects, their participation in the hearing was focused exclusively on emergency planning. See GUARD petition to intervene and supporting affidavit of Lyn Harris Hicks dated May 9, 1977.

⁹ The Carstens group is comprised of six individuals from the San Diego area, led by Mr. August Carstens of La Jolla. The Carstens group was the only participant in the seismic hearing and also participated with GUARD in the emergency planning hearing.

¹⁰ Board Memorandum and Order (unpublished), January 22, 1978, pp. 4, 13-14.

They were drafted with reference to the applicable legal standard at that time, former Appendix E of Part 50.

Except for intermittent discovery, very little happened in the case for the next three years. The NRC Staff's review of San Onofre Units 2 and 3 was substantially delayed by the necessary diversions of resources to respond to the 1979 Three Mile Island accident. During that time, new and much more extensive emergency planning rules were first proposed and later adopted, effective November 1980. At the same time, the San Onofre applicants and the local jurisdictions were working to develop new onsite and offsite emergency plans to comply with the new rules. These new plans were completed in early 1981 and served on the parties.

The Intervenor's initial contentions were in many respects superseded by the new NRC rules and the revised emergency plans. In these circumstances, the Board encouraged the Intervenor, Applicants and Staff to work out a set of stipulated contentions, which they were largely successful in doing. The following contentions, stipulated to in all but a few details, were approved by the Board for hearing:

CONTENTION 1:

Whether the state of emergency preparedness for [San Onofre Nuclear Generating Station] SONGS 2 and 3 provides reasonable assurance that the offsite transient and permanent population within the plume exposure pathway Emergency Planning Zone, 10 CFR §50.47(c)(2), for SONGS 2 and 3 can be evacuated or otherwise adequately protected in the event of a radiological emergency with offsite consequences occurring at SONGS 2 and 3, as required by 10 CFR §§50.47(a)(1), (b)(10), and Part 50, Appendix E.IV.

CONTENTION 2:

Whether there is reasonable assurance that the emergency response planning and capability of implementation for SONGS 2 and 3, affecting the offsite transient and permanent population, will comply with 10 CFR §50.47(a)(1) and (b) or (c)(1) as regards:

- A. the procedures for notification by Applicants of State and local response organizations, 10 CFR §50.47(b)(5), and for notification of and continued communication among emergency personnel by all involved organizations, 10 CFR §50.47(b)(6);

- B. the means for notification and instruction to the populace within the plume exposure pathway Emergency Planning Zone, 10 CFR §50.47(b)(5);
- C. the information and the procedure for dissemination of the information to the public within the plume exposure pathway Emergency Planning Zone on a periodic basis on how they will be notified and what their actions should be in the event of an emergency, 10 CFR §50.47(b)(7);
- D. the arrangements for medical services for contaminated and injured individuals, 10 CFR §50.47(b)(12);
- E. necessary transportation and communication equipment, and the operation of the emergency operations centers of the principal response organizations, 10 CFR §50.47(b)(8);
- F. the capability of each principal response organization to respond and to augment this initial response on a continuous basis, 10 CFR §50.47(b)(1);
- G. radiological emergency response training to those who may be called on to assist in an emergency, 10 CFR §50.47(b)(15);
- H. the methods, staffing, system, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition within the plume exposure pathway EPZ for SONGS 2 and 3, 10 CFR §50.47(b)(9);
- I. the physical design, communications equipment, and operating procedures for the Interim Emergency Operations Facility, 10 CFR §§50.47(b)(3) and (b)(8);
- J. the methods, systems and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition within the ingestion pathway EPZ for SONGS 2 and 3, 10 CFR §50.47(b)(9);
- K. general plans for reentry and recovery, 10 CFR §50.47(b)(13).

CONTENTION 3:

The emergency response plans fail to meet the requirements of 10 CFR §50.47(c)(2) because local emergency planning officials have arbitrarily established the boundaries of the Plume Exposure EPZ in that they have mechanically applied a 10 mile boundary and that the Interagency Agreement (IAEP) among all local jurisdictions defines the EPZ by drawing compass lines on a map of the area. In determining the exact size of the

EPZ, emergency planning officials have failed to consider the following local conditions:

1. topography
2. meteorology
3. evacuation routes
4. demography
5. jurisdictional boundaries
6. SAI report
7. land characteristics.

(Tr. 3491-515, 3562-84, 5543-46, 6802)

Public hearings on the emergency planning issues were held for 19 days in Anaheim, California, between August 25 and September 29, 1981. All parties were represented by counsel, presented evidence, and cross-examined witnesses. The Board heard testimony from 41 witnesses - 25 from the Applicants, 12 from the Intervenors, and 4 from the Staff. Over 130 exhibits, the bulk of them sponsored by the Applicants, were admitted into evidence. The record was closed, subject to subsequent receipt and inclusion in the record of further findings and determinations by FEMA about the offsite plans and of FEMA responses to certain questions.¹¹ Thereafter, each party submitted extensive proposed findings of fact and conclusions of law.

III. SUMMARY AND RATIONALE OF BOARD DECISIONS ON CONTENTIONS

A. Major Contested Issues.¹²

1. Determination of the Plume Exposure Pathway Emergency Planning Zone.

The basic concept underlying much of the emergency planning required by NRC regulations is the "plume exposure pathway emergency planning zone," or "plume EPZ." It is within this zone surrounding the reactor that a serious accident could cause a large release of radioactivity to the atmosphere and therefore the most detailed planning must be carried out, including plans for early notification of the populace and development of a range of protective actions. (10 CFR 50.47(b)(5), (10)) Accordingly, determination of the boundaries of the plume EPZ for a particular facility,

¹¹ Order of October 6, 1981.

¹² In the remainder of this Decision, we cite our Findings of Fact as "FF" and the Applicants', Staff's and Intervenors' Proposed Findings as "AF," "SF" and "IF."

such as San Onofre, is an important early step in the planning process. The EPZ for San Onofre as it was presented to the Board at the hearing is shown in Figures 3 and 4 on the following pages.

The NRC emergency planning regulations provide in pertinent part that

Generally, the plume exposure pathway EPZ for nuclear power plants shall consist of an area about 10 miles (16 km) . . . in radius. The exact size and configuration of the EPZ 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)

During the prehearing phase of the case, the Board invited the parties to submit comments on the following questions concerning determination of the plume EPZ:

How are the sizes of the plume exposure and ingestion pathway EPZ's to be determined under 10 CFR 50.47(c)(2)? Are site specific studies of local demography, topography and the like required? If not, exactly how are EPZ sizes to be determined, assuming that a mechanical application of the 50 and 10 figures cannot be made? (*Memorandum and Order* (unpublished), April 17, 1981, p. 11)

All parties submitted a memorandum on these questions. The Intervenors also submitted a proposed contention based upon their position that the plume EPZ is required to be based upon site-specific studies. In the absence of other such studies, they argued that the plume EPZ for San Onofre should be based upon a study contracted by the State Office of Emergency Services (OES) which focused in part on San Onofre,¹³ and upon independent work of the State OES Office. The Intervenors contended that application of that study and the OES efforts would have produced a plume EPZ of about 20 miles radius for San Onofre. (Intervenors' Memorandum Concerning Size of the EPZ, dated June 17, 1981).

The Board subsequently rejected the Intervenors' contention as an impermissible attack on the Commission's rule establishing the boundary of the plume EPZ at "about 10 miles." In the light of the parties' submissions and our own research, we ruled that site-specific studies are not required

¹³ This study, entitled "A Study of Postulated Accidents at California Nuclear Power Plants," was done by Science Applications, Inc. and is commonly referred to as the "SAI Study" or "SAI Report." A portion of the SAI Study was identified as Intervenors' Exhibit #6, but no part of it was admitted into evidence. (Tr. 9519)

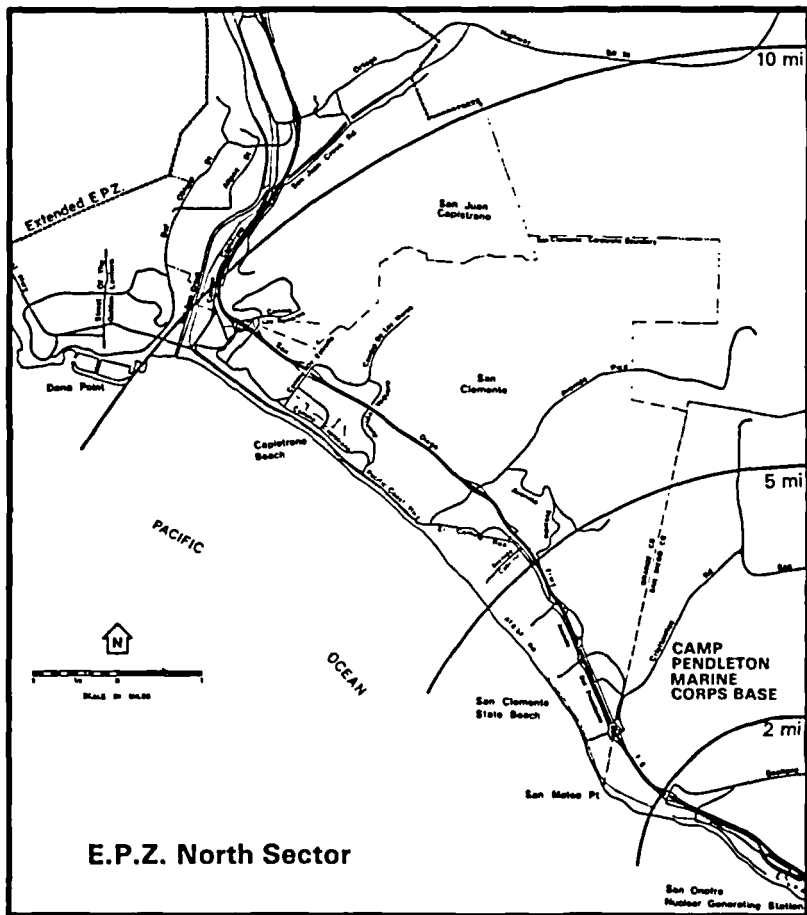


Figure 3

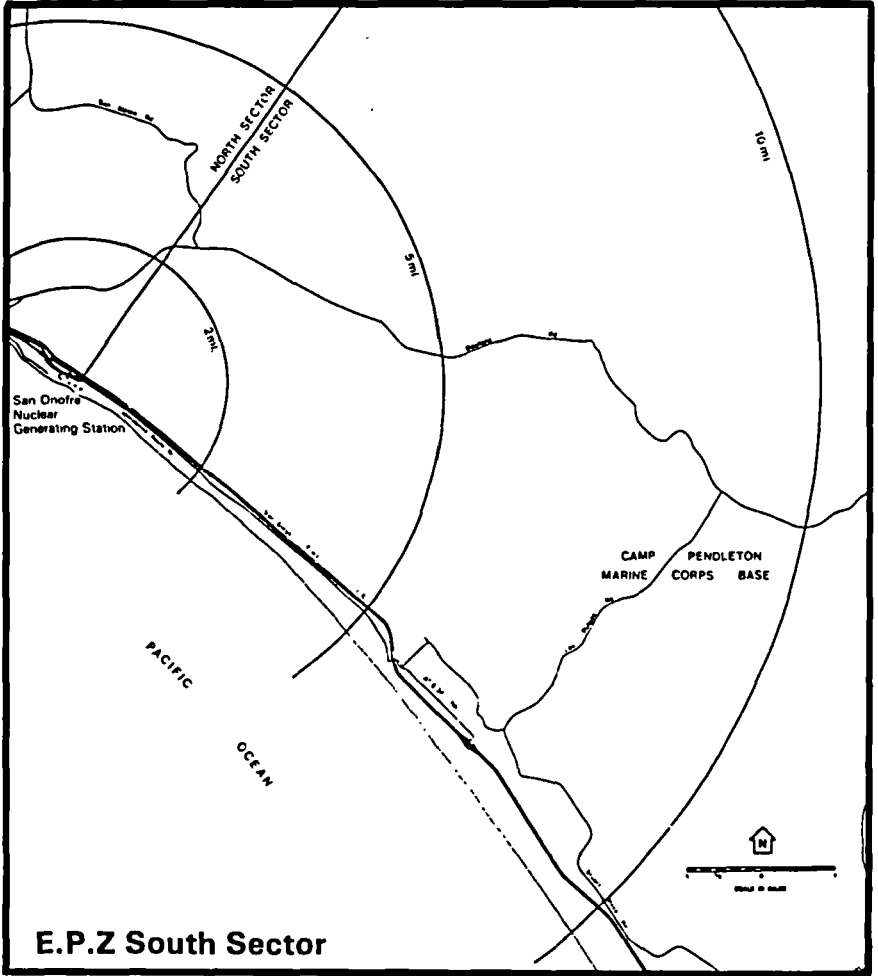


Figure 4

to establish the plume EPZ boundary. (Tr. 3497-99) Rather, those boundaries are to be established in the first instance at "about 10 miles," subject to their possible adjustment inward or outward based upon the judgment of local emergency planning officials. Such judgments would be made with reference to the factors enumerated in the rule that applies in the particular case.

Our conclusions on this issue are based primarily upon the language of the rule and the history of its adoption. We note first the language stating that the plume EPZ "shall consist of an area about 10 miles . . . in radius." This is mandatory language. It would clearly allow leeway for a mile or two in either direction, based on local factors. But it equally clearly precludes a plume EPZ radius of, say, 20 or more miles.¹⁴ In adopting the rule, the Commission spoke of local officials "considering" site-specific factors in deciding the exact size and shape of the EPZ. (45 Fed. Reg. 55406) This supports the notion that local officials are to use judgment, but that they need not also commission special studies on the subject. This is also consistent with the history of the NRC's plume EPZ rule, which shows that in-depth study of the technical issues was conducted by a joint NRC-EPA Task Force in developing the "about 10-mile" concept. As the Task Force stated:

Several possible rationales were considered for establishing the size of the EPZs. These included risk, possibility, cost effectiveness and accident consequence spectrums. After reviewing these alternatives, the Task Force chose to base the rationale on a full spectrum of accidents and corresponding consequences tempered by probability considerations.

. . .

The Task Force agreed that emergency response plans should be useful for responding to any accident that would produce offsite doses in excess of the PAGS. This would include more severe design basis accidents and the accident spectrums analyzed in the [Reactor Safety Study]. After reviewing the potential consequences associated with these types of accidents, it was the consensus of the Task Force that emergency plans could be based upon a generic distance out to which predetermined actions could provide dose savings for any such accidents. Beyond this generic distance it was concluded that actions could be taken on an *ad hoc*

¹⁴ There may be areas where a 20-mile radius plume EPZ in one direction, or even longer, may be appropriate, based, for example, on prevailing wind conditions. In such a case, a variance in the rule should be granted pursuant to 10 CFR 2.758.

basis using the same considerations that went into the initial action determination. *Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants*, December 1978, NUREG-0396/EPA 520/1-78-015, at pp. 15-16 and Appendix 1)

Given the kind and extent of study that went into the Commission's rule, it would make little sense to attempt to replicate such studies at reactor sites around the country.

In rejecting the Intervenor's first contention about the size of the EPZ, the Board indicated that it did have certain concerns about how the San Onofre plume EPZ had been determined. These concerns related at that time to the possibility that the EPZ zone in different local plans might have been determined without any reference to local conditions, or that confusion might result from having zones of different sizes in different plans. (Tr. 3499-3507) The Intervenor thereafter submitted a second contention concerning the manner of determination of the San Onofre plume EPZ. Subject to certain minor changes in and explanatory comments about this contention, the Board admitted it as Contention 3. (Tr. 6802-04) Its full text is set forth at pp. 10-11, above.

As depicted in Figures 3 and 4, the plume EPZ for San Onofre is a 10-mile radius circle. This might suggest that the EPZ was determined mechanically, simply by spinning a compass on the map, without regard to local conditions. The Applicants proved, however, that they had developed such a circular zone as a recommendation to local officials only after consideration of all of the factors listed in Contention 3. The Applicants performed map studies and visual reconnaissance of the area, taking into account potential boundaries, land characteristics and possible evacuation routes. (FF 1-5)

They also commissioned an analysis of the SAI Study by Mr. Keith Woodard, an expert in this area, to determine whether that Study was consistent with their proposed EPZ for San Onofre. Mr. Woodard explained at the hearing how his analysis supported an EPZ equal to or less than radius of ten miles. (FF 6-8)

Now that the record is closed, the Intervenor objects for the first time to the Woodard testimony as an impermissible challenge to the EPZ regulation. (IF 158) The short answer to this challenge is that it comes too late. Mr. Woodard's prefiled written testimony was duly admitted upon motion and following a "no objection" from the Intervenor. (Tr. 8228) Nevertheless reaching the merits of this question, we think that the Woodard testimony is admissible. The Intervenor's argument is an attempt to extend our negative ruling on a proposed contention (described at pp.

114-16, above), based on the alleged need for studies by experts as an absolute prerequisite to determining the location of the plume EPZ boundary. We rejected that argument, holding that such boundaries could be drawn on the basis of the judgment of local emergency planning officials, unaided by expert studies. But we did not intend to *preclude* consideration of such studies, should an applicant choose to conduct them and make them available. In this case, the San Onofre plume EPZ boundary could have been established without Mr. Woodard's analytical efforts. But such efforts can be helpful and local officials are certainly not required to close their eyes to them.

A ten-mile radius circle turns out to be an appropriate boundary for the EPZ in most areas because population density is low. There is only one segment of the circle — northwest of San Onofre along Interstate Highway 5 — which intersects significant residential populations. There too, the Applicants took local conditions into account, at least to some extent, concluding that San Juan Creek near the ten-mile line could serve as a boundary of the EPZ in that area. (FF 4-5)

Emergency planning officials of the offsite response organizations considered the Applicants' recommended EPZ and other relevant factors and adopted it in their plans. The officials in Orange County and San Juan Capistrano were concerned that that zone did not include the populated areas across San Juan Creek — Dana Point and the northern half of San Juan Capistrano. The Applicants and the local officials compromised by creating an "extended" plume EPZ to include those areas. All aspects of planning, including evacuation, would extend to those areas, except for siren coverage. Fully effective siren coverage would stop at the ten-mile line. However, there would be alternative means of emergency notification to the public in the "extended EPZ." (FF 9-14)

We agree with the Intervenor that the concept of a separate "extended" EPZ should be rejected. There is a real potential for confusion in perpetuation of this novel concept. Confusion could arise among planning officials because planning documents put the EPZ or "extended EPZ" in different places. Confusion could arise among the public in the "extended" EPZ because there would inevitably arise among some the mistaken impression that all potential evacuees are to be warned by a siren. (FF 23-25)

Two additional factors point in the same direction. We read the rule to mean that the plume EPZ boundary should not divide a populated area if, as in this case, that area can be fully incorporated by extending the boundary a short distance beyond ten miles. Second, under the balancing approach we think appropriate in this context, it is significant that the

extension of the plume EPZ we are requiring here involves only the relatively modest additional cost of a few sirens.

We are adopting an appropriate license condition requiring extension of the plume EPZ to include what is now called the "extended EPZ."

2. Offsite Public Protective Action Capability.

Contention 2 concerns whether the state of emergency preparedness at San Onofre provides reasonable assurance that the transient and permanent population within the plume Emergency Planning Zone (EPZ) can be evacuated or otherwise adequately protected in the event of a radiological emergency with offsite consequences. As noted by the Staff, "The Commission's regulations call for the development of a range of protective actions for the plume exposure pathway EPZ and require that guidelines for the choice of protective actions during an emergency be developed and in place. (See 10 CFR §50.47(b)(10)) Appendix E.IV to Part 50 calls for an analysis of the time required to take various protective actions." (SF 39) The principal protective actions which might be taken are evacuation, sheltering and thyroid prophylaxis. Other protective actions include use of respiratory equipment and protective clothing.

Following an accident with potential offsite public health consequences, evacuation, with the goal of preventing exposure of the public, may or may not be the action of choice. Because evacuation of large numbers of people is an inherently costly and disruptive step, evacuation may not be desirable if the radiation dose to be saved is very small. Moreover, other constraints to evacuation may be present. These include environmental, demographic and time factors as well as the availability of resources, the type of radioactivity release and expected exposure duration. Consideration of such constraints at the time may lead to recommendations other than evacuation.

Sheltering can be a preferred alternative to evacuation. Sheltering would be the action of choice when there is inadequate lead time due to the imminence of the passage of a plume, or when severe weather conditions are present. Other constraints such as evacuation route disruption or unusual traffic conditions might dictate sheltering rather than evacuation. Sheltering and evacuation may be employed in combination. For example, sheltering, followed by evacuation of the population away from the plume pathway after passage of the plume, would minimize exposure from deposited radioactive debris. (FF 9-12)

In order to make an informed choice of the preferred protective action during an accident, the decisionmakers must have knowledge of the time required to accomplish different protective actions under the conditions then in effect. We heard extensive evidence concerning how the evacuation

time estimates were made and how those estimates accommodated the site-specific demographic and geographic aspects of the plume EPZ. The Intervenor's were critical of the evacuation time estimates provided by the Applicants, but the record is clear that the "unique geographical constraints" which the Intervenor's identified in their findings were in fact fully considered in the derivation of the time estimates. The regulations does not require that the time estimates for evacuation be less than a specified time period. The purpose of the time estimates is to provide decisionmakers with an appropriate basis for determining whether evacuation can be carried out successfully in advance of potential radiation exposure under the circumstances present at that time. (FF 18-22)

Several of the Intervenor's witnesses challenged certain assumptions used in making the time estimates and claimed that overly optimistic evacuation conditions had been used. The record does not support that claim. The computer program used is an accepted program for time estimate studies, and the postulated conditions are conservative. The input to the study includes conservative estimates of transient populations, and uses generally accepted highway capacity figures. The computer program treats the traffic loading of Interstate 5 in a manner that lengthens the final time estimates. That is, the highway is considered to be fully loaded during only one-half of the evacuation time. Mobilization times were derived from empirical data from appropriate sources, as was road blockage due to accidents. The conditions described for nighttime evacuation seemed reasonable to the Board. The impact of spontaneous evacuation, either within or outside the EPZ, is likely to lessen actual evacuation time, rather than extend it. The time estimates consider queuing and delay times at on-ramps and slow secondary streets. Moreover, individuals responsible for the use of the time estimates during an emergency, which includes persons from the local jurisdictions, the California Highway Patrol and the California Department of Transportation, have reviewed the time estimates and found them to be reasonable. (FF 23-25)

In addition to time estimates we also received extensive evidence concerning planning for an evacuation. The Applicants and the principal offsite emergency response organizations have adopted and implemented coordinated evacuation plans. To assure on-going coordination in the offsite plans an Interjurisdictional Planning Committee has been formed. This Committee is made up of representatives from the Applicants, the Marine Corps from Camp Pendleton, the Cities, Counties and California State Parks. The Committee is active and has been revising the individual emergency plans to reflect changes and improvements suggested by FEMA. (FF 32-36)

The Intervenor's were critical of emergency plans for special groups. (IF 3-21) The record reflects the existence of plans and capabilities to take the full range of protective actions for the elderly, the handicapped and other groups needing special assistance in evacuation. We find reasonable assurance that those needing special assistance can be assisted. We base this on the continuing education program designed to identify and provide for all persons and institutions needing assistance and the availability of an adequate number of buses, special vehicles and ambulances. Medical facilities exist at the relocation centers operated by the Red Cross and there is an on-going program of training and drills. Each of the Intervenor's witnesses who was involved with assisting handicapped and elderly persons is committed to helping the Applicants and local officials in identifying those persons needing special evacuation assistance. The evidence is persuasive that present and future planning is and will be effective in providing offsite protection to the public. (FF 55)

We also received substantial evidence on sheltering and thyroid prophylaxis. The Intervenor's did not present evidence on these subjects. We conclude that planning for sheltering and thyroid prophylaxis is acceptable and provides assurance that those protective measures will be available and adequate if they are needed. (FF 56-58)

The massive record before us on Contention 1 strongly supports our overall conclusion that the Applicants have met their burden of proof on that contention.

3. Scope of the Legal Obligation to Provide Arrangements for Medical Services.

Introduction. Contention 2D concerns "arrangements for medical services for contaminated and injured individuals" in the event of a serious accident. The Applicants' arrangements include medical care and hospitalization for a limited number of plant employees or emergency workers who might be injured at the site; we find them to be fully adequate for the onsite plan. However, no arrangements were made specifically to provide medical services for injured members of the public offsite in the plume EPZ.¹⁵ (Tr. 7076-7124)

The Intervenor's sought to introduce evidence of a need for medical arrangements for the offsite public. The Applicants, supported by the

¹⁵ The Applicants did provide some medical training to offsite emergency personnel which presumably would confer an incidental benefit on injured members of the public. See footnote 29, below and accompanying text. But this was not pursuant to any obligation they recognized to plan for the offsite public. Moreover, this training alone could only discharge a part of their obligations under the rule.

Staff, argued that no such arrangements are required. (Tr. 9634-60) The Board heard argument on the legal question and ruled in the Intervenor's favor that some level of medical services planning for the offsite public is required, paving the way for the introduction of evidence on that subject. (Tr. 9666-67)

We are reaffirming that ruling in this Initial Decision. Furthermore, we are conditioning our authorization of operating licenses for San Onofre Units 2 and 3 upon the Applicants and local officials making appropriate arrangements for medical services for the offsite public, to be completed and reviewed by this Board in the first six months of full power operations.

The legal question whether medical service arrangements must be made for the offsite public is not, in our judgment, a very close one, but it is somewhat debatable. We discuss the relevant factors in the following paragraphs.

Regulatory Language. We begin, of course, with the language of the controlling regulation. 10 CFR 50.47(b)(12) provides that:

(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. (Emphasis added.)

This language could hardly be clearer in stating that "offsite" plans are to include arrangements for medical services. The answer to the remaining question — the identity of the "contaminated injured individuals" — is not spelled out. However, the most reasonable inference is that they are the public offsite in the plume EPZ, for they are the intended beneficiaries of the offsite plans. As the record in this case makes clear, the Applicants' onsite plan, the other plan referenced in the rule, will take care of anyone injured at the site.

That conclusion is buttressed by the fact that some of the fifteen other planning standards under subsection (b) — unlike subsection (12) medical service arrangements — are explicitly made applicable primarily or exclusively to the licensee. See subsections (2) and (4). In light of this deliberately chosen drafting scheme, it is reasonable to suppose that arrangements for medical services would have been explicitly restricted to the onsite plan, had that been the Commission's intention.

There is nothing in the language of the regulation supporting the Applicants' and the Staff's narrow reading of it. Understandably, they looked elsewhere for support.

Legislative History. The Applicants relied primarily on the legislative history of the rule. An important part of that history is the Report of the

Joint NRC/EPA Task Force on Emergency Planning, NUREG-0396 (1978). The Task Force Report included several planning concepts, most notably the establishment of two emergency planning zones and variable times for taking different protective actions. Prior to the promulgation of the new rules on emergency planning, the Commission issued a Statement of Policy endorsing these planning concepts for use by its Staff and State and local officials, pending further rulemaking. (44 Fed. Reg. 61123) It is in that context that the Applicants' citation of the following language from NUREG-0396 must be viewed:

The task force *does not* recommend that massive emergency preparedness programs be established around all nuclear power stations. The following examples are given to further clarify the Task Force guidance on EPZ's:

. . .

No construction of specially equipped fallout shelters;
No special radiological medical provisions for the general public;
No new construction of special public facilities for emergency use.
Id. at pp. 14-15. (Emphasis in the original)

The Applicants focused particularly on the language: "*No special* radiological provisions for the general public are necessary," arguing that it was —

indicative of the fact that we are expected to be dealing with a very narrow segment of the population for planning purposes, the injured contaminated persons directly involved in an accident, not the general public as a part of your pre-planning. (Tr. 9639-40)

These statements from NUREG-0396 lend some support to the Applicants' position, but only if the word "provisions" in the phrase "special radiological medical provisions" can be considered synonymous with the word "planning." As an abstract matter, the dictionary indicates that that is usually not the case.¹⁶ In addition to that dictionary meaning, the word "provisions," as we read it in the present context, is not synonymous with the broader concept of "planning." The main emphasis in this part of the Task Force Report is on the idea that large advance expenditures do not

¹⁶ The Board's dictionary, *The Random House College Dictionary* (Rev'd. 1980), gives as a tertiary meaning of "provision" an "arrangement beforehand that provides for or against something" — an apt description of a "plan." (P. 1065) But the primary meaning of "provision" is "the art of providing or supplying food or the like" — suggesting in the present context the stockpiling of equipment and medicine. The primary definition of "plan" is "a method of action or procedure." (P. 1014) The definition of "plan" does not equate or draw any relationship to "provision."

have to be made for the sole purpose of planning for a very low probability accident. We agree. Of course a licensee does not have to build a special hospital just to have one ready in case such an accident ever happens. Similarly, medical "provisions" — in the sense of stockpiled equipment and medicine — should not be required. The Board has stressed this point repeatedly in this case. (Tr. 9645; Memorandum of October 14, 1981) But when special radiological medical "provisions" are understood in the accustomed "stockpiling" sense, it does not follow that some meaningful but cost-effective levels of planning, development of procedures, and training should not be required.

Moreover, the quoted statements from NUREG-0396 come from only two pages of a lengthy staff document. Although the Commission itself did endorse certain concepts in the document in its 1979 Statement of Policy on Emergency Responses, that Statement does not endorse or refer to the quoted language; indeed, it does not even refer to the general subject of arrangements for medical services. (44 Fed. Reg. 61123) Thus, whatever the quoted statements may imply for the question we are addressing, they can only be considered part of the historical background of the rule; they have never represented an articulated Commission policy position. There appears to be nothing in the legislative history of the emergency planning rule to indicate that the Commission gave separate consideration on the rulemaking record to the question of medical services. (See Supplementary Information concerning Final Emergency Planning Rule, 45 Fed. Reg. 55402-55408)

The Historical Context of the Regulation's Development. In addition to the rulemaking record itself, it is appropriate to consider the broader historical context that produced the present emergency planning regulations. Indeed, a Commission regulation adopted in response to the TMI accident explicitly admonishes Licensing Boards to interpret existing regulations and policies "with due consideration to the implications for those regulations and policies of the Three Mile Island accident." 10 CFR 2.764(f)(ii) Before the TMI accident, the likelihood of a very serious nuclear accident (then called "Class 9" accidents) was considered so remote that emergency plans were not required to address their consequences in any detail. Pre-TMI plans were essentially designed to cope with design basis accidents.

After TMI, however, the Commission recognized that the accident — has emphasized the need for changes in NRC policies regarding the considerations to be given to serious accidents from an environmental as well as a safety point of view. Commission Statement of Interim Policy, 45 Fed. Reg. 40101.

The Commission spoke in the same Statement of "a number of ongoing activities . . . which intimately relate to the 'Class 9 accident' question," referring specifically to the pending rulemaking to revise emergency planning requirements. *Id.* at 40103. Upon their adoption, the new emergency planning rules were again explicitly acknowledged as one response to the TMI accident. See 45 Fed. Reg. 55402.

In this historical setting, the argument against any medical planning for the public living near a nuclear reactor does not ring true. It comes down to saying, as the Applicants did here, that even after the TMI accident, emergency plans do not have to be designed to cope with anything more serious than design basis accidents. See Tr. 9641-42. Design basis accidents are expected to produce only small to moderate doses of radiation, none of them even approaching the dose level associated with radiation sickness.¹⁷

Appendix E. The NRC Staff, like the Applicants, argued that there is "no specific requirement for advance detailed planning with regard to the general public," that the offsite plans are not required to have anything in them about medical treatment. (Tr. 9655-56) The Staff placed principal reliance on inferences they urged be drawn from provisions of Appendix E to Part 50. This Appendix was adopted contemporaneously with the new planning rule and spells out certain details about the required contents of emergency plans. Section IV of Appendix E prescribes the contents of an applicant's emergency plans (but not the offsite plans), including, in subsection E, "Emergency Facilities and Equipment." These are to include, among other things, medical facilities and supplies at the site for decontamination and treatment of radiation, arrangements for physicians' services, and arrangements for offsite hospital treatment of persons injured onsite.

The Staff argued that this specific enumeration of required medical facilities and arrangements in an applicant's onsite plan carried with it a negative inference that any such facilities are required for offsite plans. (Tr. 9651-53) This might be a persuasive argument if there were a corresponding section of Appendix E setting out in similar detail the required contents of offsite plans, and omitting any corresponding requirement for medical facilities or services. Such a conspicuous omission presumably would carry with it a strong negative inference about any need for medical arrangements for the public offsite. But there is no such

¹⁷ For example, Table 15.3 of the SER lists the consequences of seven design basis accidents and projects whole body doses ranging from one to seven rems from two hours of exposure at the exclusion area perimeter. The symptom threshold for radiation sickness is 75 rems. (Tr. 7085)

corresponding section of Appendix E addressing the required contents of offsite plans.¹⁸ Given that fact, one could argue with equal force the converse of the Staff's argument. That is, if the Commission were to write another section addressing the required contents of offsite emergency plans, the best evidence of what it would require in medical arrangements for injured members of the general public is what it has already required for people injured onsite.

NUREG-0654. A joint NRC/FEMA staff-level steering committee has prepared and published NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." NUREG-0654 is in substance a regulatory guide which provides licensees and State and local emergency planning officials with specific criteria for preparation of emergency plans, based upon the relatively general standards enumerated in the rule. Like other Staff regulatory guides, NUREG-0654 is not itself a regulation and therefore does not have the force of law. However, we are giving careful consideration to it as a product of NRC/FEMA staff technical expertise and because the criteria in NUREG-0654 are cited favorably by the Commission in a footnote to the regulation. See 10 CFR 50.47(b), page 370, footnote 1.

As the Intervenor argued before us, NUREG-0654 supports their view that at least some arrangements for medical services are to be made for the general public. (Tr. 9663-64) Page 69 of NUREG-0654 is reproduced in full on page 1192. The diagram indicating applicability of several "Evaluation Criteria" to Licensee, State and Local plans clearly indicates that local plans are to include, among other things, local and backup hospital and medical services and arrangements for transportation of victims. This means to us that arrangements for hospital, medical and transportation services are required for injured members of the general public — the people for whom local plans are prepared.

The Staff's lead witness on emergency planning, Mr. Brian Grimes, read page 69 of NUREG-0654 much more narrowly. Mr. Grimes is Director of the NRC's Division of Emergency Preparedness and Co-chairman of the joint NRC/FEMA Steering Committee that wrote NUREG-0654. This background would ordinarily lend weight to his testimony, particularly on a close question. But since NUREG-0654 is a joint

¹⁸ The Intervenor argued that Section II E of Appendix E was intended to refer to medical arrangements for the general public. (Tr. 9661) The language of this provision is broad enough to include the public, but it is not explicit in that regard. The entire section concerns the required showing at the construction permit stage of the potential ability of the site to permit effective emergency planning at the operating license stage. It does not address the details of emergency plans and, in our judgment, is not relevant here.

L. Medical and Public Health Support

Planning Standard

Arrangements are made for medical services for contaminated injured individuals.¹

Evaluation Criteria

Applicability and Cross Reference to Plans		
Licensee	State	Local

1. Each organization shall arrange for local and backup hospital and medical services having the capability for evaluation of radiation exposure and uptake, including assurance that persons providing these services are adequately prepared to handle contaminated individuals.

X_____	X_____	X_____
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2. Each licensee shall provide for onsite first aid capability.

X_____		
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3. Each State shall 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 individuals. The listing shall include the name, location, type of facility and capacity and any special radiological capabilities. These emergency medical services should be able to radiologically monitor contamination personnel, and have facilities and trained personnel able to care for contaminated injured persons.

	X_____	
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4. Each organization shall arrange for transporting victims of radiological accidents to medical support facilities.

X_____	X_____	X_____
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¹ The availability of an integrated emergency medical services system and a public health emergency plan serving the area in which the facility is located and, as a minimum, equivalent to the Public Health Service *Guide for Developing Health Disaster Plans*, 1974, and to the requirements of an emergency medical services system as outlined in the *Emergency Medical Services System Act* of 1973 (P.L. 93-154 and amendments in 1979 P.L. 96-142), should be a part of and consistent with overall State or local disaster control plans and should be compatible with the specific overall emergency response plan for the facility.

committee product of two agencies, Mr. Grimes' interpretation of it is certainly not controlling.

Mr. Grimes testified that the chart on page 69 should not be read to mean what it clearly seems to say — that various medical services should be arranged for the general public offsite. Rather, he said that the authors of NUREG-0654 had had in mind only injuries sustained onsite — for example, the possibility of injuries to emergency workers (perhaps half a dozen) from a nearby town who might be sent to the site to assist. (Tr. 11,059-60)

Notwithstanding Mr. Grimes' close involvement in the development of NUREG-0654, we cannot accept his "emergency workers" interpretation of page 69 of NUREG-0654 with respect to the required contents of local plans. That interpretation is sharply at variance with the language and plain import of the document. Nor is the practical difference a minor one. On the contrary, there is a world of difference between making plans for half a dozen workers, as opposed to the general public. There is nothing on page 69 even suggesting that its local plan requirements are intended only for a few onsite workers. Furthermore, that interpretation produces the anomalous result of redundant planning for onsite workers, and no planning at all for the public, because injured workers are already completely taken care of under the Applicants' onsite plan. Finally, FEMA, whose representatives participated with NRC in writing NUREG-0654, reads it much more broadly, a matter we discuss next.

The FEMA Position.¹⁹ During the hearing we posed several questions to Counsel for FEMA to be answered by FEMA on the record, including the following question:

In determining whether offsite emergency plans concerning the 10-mile EPZ provide adequate protective measures in the event of a serious radiological emergency, does FEMA believe that any specific arrangements need to be made for medical services for people in the zone who may be contaminated, suffering from radiation or both? If not, why not? If so, what kinds of arrangements?

We later received a letter from a FEMA official providing that agency's answer to our question, in part, as follows:

FEMA believes that special arrangements for medical services need to be made for persons within the 10-mile EPZ who may

¹⁹ We recognize that the Interim Findings and Mr. Nauman's testimony seemed to express qualified approval of medical services arrangements, without directly focusing on the present question. (Int. Ex. #15, p. 3; Nauman testimony, p. 9, ff. Tr. 10,372) In any event, we consider the October 15, 1981 letter to be the controlling statement of the FEMA position in this case.

suffer from radiation exposure, radiological contamination or both. Moreover, this position is supported by specific planning standards and criteria in NUREG-0654/FEMA-REP-1 Rev. 1 for use by State and local governments in assuring that adequate arrangements are made for the provision of medical services for accidents encompassing the full range of the four classes of emergency action levels as delineated in Appendix 1.

The planning and preparedness guidance provided in NUREG-0654/FEMA-REP-1 for medical services is based, in part, on the possibility that despite the application of protective response measures, persons within the 10-mile EPZ may be exposed to dangerous levels of radiation. Those persons so exposed would, therefore, require appropriate medical services. (Letter to the Board Chairman from Marshall Sanders, Acting Chief, Technological Hazards Division, dated October 15, 1981)

This language is about as clear a statement as one could make that arrangements for medical services should be made for the general public in the 10-mile EPZ. To dispel any possible doubt in that case, the letter explicitly refers to separate questions posed by injuries to emergency workers, and states that FEMA is assuming the general public in their comments.²⁰

In answer to a separate question, FEMA indicated that the planning guidance given in NUREG-0654 applies to a range of accidents, including so-called "Class 9" accidents. However, separate consideration is not given to "Class 9" accidents, as such. FEMA also pointed out that a sufficiently serious accident might require use of medical facilities outside the EPZ, or even outside the State. Unlike the NRC Staff, we do not read this discussion of Class 9 accidents as in any way derogating from the need to make medical arrangements for the public for all credible accidents.

Comments on the FEMA letter were received from the NRC Staff and the Applicants. The Staff reads the FEMA letter as consistent with its "emergency workers only" interpretation of page 69 of NUREG-0654. This the Staff accomplishes by simply ignoring most of the letter, including the language we quoted above. Nor do we find the Applicants' comments persuasive. They read the FEMA letter as relying completely on NUREG-0654. For them, it is then an easy step to NUREG-0396, and thence to

²⁰ The letter goes on to list eight different kinds of medical arrangements which, in FEMA's view, should be made for the public by local officials.

their very restrictive reading of that document (see pp. 1187-1189, above). Like the Staff, the Applicants ignore the portions of the FEMA letter we have quoted which lead planning obligations broadly to include the public.²¹

Consistency of Interpretation. Because the emergency planning rule is still relatively new, few licensing boards have issued decisions involving the medical services requirement.²² The TMI Restart Proceeding addressed six contentions concerning the adequacy of State and local medical facilities, procedures and training. Although the point was not specifically discussed, it apparently was assumed by the Board and all parties that there were legal obligations to make plans for medical services for the offsite public. The Staff's proposed findings stated that adequate plans had been made, not, as in this case, that no such plans were required.²³

The offsite plans in the TMI case are plainly intended for the offsite general public, not merely a handful of employees and workers at the site. For example, medical services for radiation victims in York County are to be provided in 18 identified hospitals. In addition, the State's emergency plan identifies 228 facilities that can provide decontamination and radiation treatment. Training in the treatment of radiological accident victims has been provided to large numbers of health specialists. (Initial Decision Findings 1891, 1892, 1895)

We note these findings in the TMI case for two reasons. First, they belie a possible argument that the making of medical arrangements for the general public is necessarily impractical or unduly costly. Second, the

²¹ After we received comments from the Staff and Applicants, the Board Chairman received a letter from Counsel for FEMA in this case, the full text of which is as follows:

"November 19, 1981

The Federal Emergency Management Agency (FEMA) Radiological Emergency Preparedness staff have seen the comments . . . of Brian Grimes dated November 16, 1981, and informs me that the views contained therein are consistent with FEMA's previously furnished interpretation of medical safety provisions under NUREG 0654/FEMA REP-1."

This letter is reproduced here in its entirety because, through inadvertence, it apparently was not previously served on the parties. This letter is not a legal or policy position peculiarly within FEMA competence to which we might owe some deference. It simply asserts consistency between two documents, a matter that we are as competent to judge as anyone. The Board rejects the assertion that the Grimes' memorandum of November 16, 1981 and the FEMA letter of October 15, 1981 to the Board Chairman (to which the letter quoted above apparently refers) are "consistent." As we read them, the two documents are fundamentally inconsistent. This letter was unsolicited, at least by the Board. Like other attempts to square the circle, this one fails.

²² See *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Docket No. 50-289-SP, Partial Initial Decision of December 14, 1981, LBP-81-59, 14 NRC 1211. See also *Pennsylvania Power and Light Co.* (Susquehanna Steam Electric Station), Initial Decision, LBP-82-30, 15 NRC 771. Neither the Appeal Board nor the Commission has considered that requirement.

²³ NRC Staff Proposed Findings dated August 12, 1981, pp. 231-239.

minimum level of emergency planning protection should be substantially comparable for commercial nuclear power reactors in Pennsylvania, California, and elsewhere. If the more extensive medical services planning at TMI represents a mistaken overreaction to the accident, that is only a financial concern to the local governments and possibly to the utility. But if that kind of planning represents, as we believe, a real increment in public safety, it should be required at San Onofre and all similar power reactors.

Evidence of Need. Strictly speaking, evidence of need is not necessary to support a requirement of medical services for the offsite public if we correctly read the rule as imposing such a requirement. For if our interpretation is correct, then the Commission is presumed to have considered evidence of need when it adopted the rule. Conversely, evidence of a total lack of need could be excluded as an impermissible attack on the rule. But where, as here, the kind and extent of required medical services is not specified in the rule, evidence of need must be considered in determining those questions.²⁴

The evidence in this record on the need for medical services for the offsite public is rather scanty. The Applicants' principal witness, Dr. Linnemann, testified that the symptoms threshold for radiation sickness is 75 rems whole body dose, and that hospitalization is indicated by a 150 rem whole body dose.²⁵ Given the characteristics of radiation releases and capabilities for protective action, Dr. Linnemann could "see no reason for anyone offsite receiving a large enough exposure to initiate the first symptoms of radiation sickness, much less hospitalization." (Tr. 7085-87) This indicates that Dr. Linnemann does not view serious, low-probability accidents as realistic planning hypotheses.²⁶ In any event, although exceptionally well qualified in medical aspects of radiation treatment, Dr. Linnemann is not qualified in the record as an expert in accident probabilities or the intricacies of mass evacuations; we are therefore discounting this aspect of his testimony.

²⁴ Another way of saying this is that adequacy of medical services for the offsite public is site-specific and must be determined case by case. Plume EPZ population is probably the single most important factor. Population in the plume EPZ around San Onofre is substantial, about 112,000. (App. Ex. #132, A-2) This suggests a need for a significant level of medical services arrangements. By contrast, a reactor situated in a very sparsely populated area would require less extensive arrangements.

²⁵ Another witness, Dr. Rex Ehling, the Health Officer of Orange County, testified that hospitalization would be desirable for a 200 rem exposure. (Tr. 9992)

²⁶ The medical planning done by the Applicants was based essentially on postulation of design basis accidents. (Tr. 9641-42) The Staff's Project Manager for San Onofre testified that that approach was inadequate. (Tr. 10361-62) We agree with the Project Manager.

The only substantial evidence in the record about the probable doses of radiation received by the offsite public in the event of a serious reactor accident at San Onofre is in Chapter 7 of the Final Environmental Statement (FES), NUREG-0490. Table 7.4 of the FES is reproduced on the opposite page. It shows, for example, that the probability of an accident occurring at San Onofre that would deliver doses of over 200 rems to 2,000 people is one in one million (10^{-6}) in any one year of reactor operation. A 200 rem dose substantially exceeds Dr. Linnemann's 150 rem threshold for hospitalization. Although the single year risk, viewed in isolation, is very remote, the risk that such an accident might happen over the thirty-year life of the plant would be significantly greater. In any event, it is difficult to argue that such remote contingencies should be disregarded altogether for medical planning purposes, when risks in the same order of magnitude have been considered for related purposes in the emergency planning context.²⁷

We heard testimony on FES Tables 7.3 and 7.4 from a witness for the Intervenor, and from the Staff's Project Manager. The Intervenor's witness testified to the effect that virtually everyone in the EPZ, 60-90,000 people, would receive a substantial radiation dose and require medical treatment. (Tr. 7904-24) This testimony was admitted over objection and subject to a motion to strike. The purpose of the Project Manager's testimony was to explain the derivation of Table 7.4 and related material by the Staff, and to show that the Intervenor's witness had used impermissible assumptions in his calculations based upon Table 7.4 (Tr. 10,322-40) We agreed that the Intervenor's witness had used impermissible assumptions and granted the motion to strike portions of his testimony on that basis, and because of his lack of the necessary expertise. (Tr. 10715-17)

The Staff's Project Manager also testified that the Staff now believes that Table 7.4 "significantly overestimates the consequences of very improbable and very severe accidents" and that Table 7.4 should not be used for emergency planning purposes. (Tr. 10340-41) That conclusion was based essentially on better data on the probability of the most severe accidents and more realistic assumptions about protective actions.

We accept the Staff's testimony that the FES Table 7.4 is overly conservative. But it does not follow that that Table and related materials in FES Chapter 7 should not be used at all for emergency planning

²⁷ For example, the PWR 2 accident from the Reactor Safety Study, which has a probability per reactor year of 7×10^{-6} , was considered in developing the 10-mile EPZ boundary concept. See Affidavit of Brian Grimes dated August 3, 1982. The Staff's Project Manager for San Onofre, Mr. Rood, expressed the view that specific emergency planning should not be required for an accident having a probability of 10^{-8} , or one in 100 million. (Tr. 10,362)

Table 7.4 Summary of Environmental Impacts and Probabilities

Probability of impact per year	Persons exposed over 200 rem	Persons exposed over 25 rem	Acute fatalities	Population exposure, millions of man-rem 80 km/total	Latent* cancers, 80 km/total	Cost of offsite mitigating actions, \$ millions
10^{-4}	< 1	< 1	< 1	< 0.001	< 60	< 0.001
10^{-5}	< 1	< 1	< 1	0.4/0.6	< 60	12
5×10^{-6}	< 1	160	< 1	2/10	1,400/2,500	400
10^{-6}	2,000	190,000	< 1	45/100	23,000/36,000	5,000
10^{-7}	31,000	1,100,000	1,100	110/300	71,000/143,000	15,000
10^{-8}	100,000	2,000,000	30,000	170/340	12,000/24,000	35,000
Related Figure	7.2	7.2	7.4	7.3	7.5	7.6

* Genetic effects would be approximately twice the number of latent cancers. Thirty times the values shown in the Figure 7.5 are shown in this column reflecting the 30-year period over which they might occur.

NOTE: Refer to Section 7.1.4.6 for a discussion of uncertainties in risk estimates.

purposes, particularly when we have nothing better to consider. We are not looking to the FES for precise quantifications of risk and consequences, but only for a rough approximation of radiation effects on the public in the event of a serious accident at San Onofre. From that perspective, Table 7.4 and the related materials in the FES plainly indicate that substantial numbers of people may require medical treatment and hospitalization should a serious accident and large radiation release occur there.

The Board's Conclusions. The Board concludes that 10 CFR 50.47(b)(12) requires applicants and offsite jurisdictions to develop and stand ready to implement arrangements for medical services for members of the offsite public who may be injured in a serious accident. The clear language of the rule virtually compels that conclusion. Most of the other factors usually considered in interpreting an agency rule also point in that direction. In addition, the Federal Emergency Planning Agency (whose views on these matters are entitled to deference, 10 CFR 50.47(a)(2)) has advised that, in its expert judgment, medical arrangements for the offsite public are necessary.

Our conclusion means that the offsite emergency response plans for San Onofre Units 2 and 3 do not presently meet the standard established by 10 CFR 50.47(b)(12). It does not necessarily follow, however, that this failure must result in our declining to authorize issuance of operating licenses, provided that that failure is remedied in the near future. In a case like this, the emergency planning rule provides that:

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 10 CFR 50.47(c)(1)

There are several factors present in this case supporting our conclusion that full power operations should be allowed, pending rapid development of appropriate medical arrangements for the offsite public. First and most important is that such operations for a brief period, no longer than six months, will not significantly endanger the public health and safety. As discussed previously, our principal concerns arise from the risk of a serious accident over the facility's 30-year life. Everything in the record indicates that the risks posed by operations in any given year or less are very remote — significantly less than 10^{-6} , or one in one million.²⁸ Although the Applicants' onsite plan cannot do service for possible offsite needs over the

²⁸ On the basis of similar reasoning, the Commission directed this Board not to pursue the possible effects of a severe earthquake on the emergency plans for San Onofre. The Commission expressed its intention to address that question and related issues in a rulemaking proceeding, reasoning that the dangers involved would be remote during the time required to complete rulemaking. (Commission Memorandum and Order, December 8, 1981, CLI-81-33, 14 NRC 1091)

long run, the onsite plan is very well conceived and staffed, and its capacities appear to exceed what would be needed by persons injured at the site. (See pp. 1245-1247, below) Accordingly, it could provide some medical services to the offsite public. In addition, although arguing against any legal obligation to do so, the Applicants have provided some useful training seminars on the medical effects of radiation to offsite emergency response personnel.²⁹ Beyond that, other medical services capacities in the area probably could be called upon on an *ad hoc* basis. Finally, the Applicants' and local officials' overall commendable attitude and good faith efforts to satisfy these new, and sometimes less than completely clear, emergency planning requirements should be taken into account. Those factors make us confident that the Applicants and local officials will make prompt efforts to develop adequate offsite medical arrangements and that they will be in place as soon as possible. We believe, however, that six months is the minimum reasonable time in which to expect full development of the required plans and their review by the Board. In our judgment, all of these factors show that full-power operations for no more than six months while adequate offsite medical arrangements are being developed would not be significant for San Onofre Units 2 and 3 within the meaning of 10 CFR 50.47(c)(1).

We have neither the expertise nor the data to prescribe the details of medical services arrangements for the public at San Onofre. Nor are we setting any specific requirements in terms of numbers of people that the new plans must be able to accommodate.³⁰ As indicated previously, we are not directing the construction of hospitals, the purchase of expensive equipment, the stockpiling of medicine — in short, any large expenditure the sole purpose of which would be to guard against a very remote accident. The emphasis, rather, is on developing specific plans and training people to perform medical services. There should be ample guidance in those regards from the NRC and FEMA staffs and from other emergency plans, such as the Three Mile Island plans.

²⁹ Linneman testimony, Tr. 7091-102.

³⁰ Arguably one could derive a numerical requirement from the data we have cited in Table 7.4 of the FES. That data can be interpreted to indicate that the offsite plans should include a capability to hospitalize about 1000 people, if necessary. The 1000 number is based on the 2000 people projected to receive over 200 rem doses in the 10^{-6} accident, reduced by half to reflect the very low likelihood of a 10^{-6} accident and the Staff's testimony that the risk calculations in Table 7.4 are unduly conservative. Given the other variables that would affect such a calculation and recognizing the uncertainties in the available data, we do not adopt this numerical approach. But it is at least suggestive of the extent of medical arrangements that might be needed.

4. Monitoring Radiation in the Plume Exposure Pathway Emergency Planning Zone.

Contention 2H places in controversy the adequacy of the methods, staffing, systems and equipment of both the Applicants and the offsite response organizations to assess and monitor actual or potential offsite consequences of a radiological emergency in the plume EPZ. 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 decisionmakers 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.

Radiation assessment capability is required of both the onsite plans of the Applicants and the offsite plans of the principal³¹ response organizations. However, all parties acknowledged that there were deficiencies in the radiation assessment capabilities of the offsite response organizations and no party asked us to find a present existing “reasonable assurance of adequacy” concerning that capability. Accordingly, our attention focused primarily on whether the Applicants’ resources could meet all needs for radiation assessment and monitoring in the plume EPZ.

The Applicants have onsite extensive and sophisticated means to assess and monitor radiation. This includes automated radiation detection equipment and an instrumented meteorological tower. The Applicants are installing a health physics computer which will process meteorological data and data from radiation monitors to calculate doses at different distances from the plant. It will be available for connection to the principal offsite response organizations. (FF 1-7)

In the event of a release of radioactivity offsite, the Applicants would deploy mobile monitoring teams in the likely direction of the plume. Significant values of radiation would be reported immediately to the site. Two monitoring teams could be deployed within thirty minutes, and additional teams could be deployed thereafter, if necessary. In addition, the Applicants have arrangements for the emergency services of trained personnel and use of equipment from two other major utilities. The Staff

³¹ Although a limitation to “principal” response organizations is not explicit in the rule, we see no reason to require a separate dose assessment capability in a secondary response organization like San Juan Capistrano, when a principal response organization like Orange County either is or will eventually be capable of monitoring the entire county.

reviewed the Applicants' onsite capabilities and concluded that they were capable of performing all of the offsite assessment and monitoring that may be required in an emergency. (FF 8-14)

The testimony of witnesses from the offsite response organizations demonstrate significant assessment and monitoring capabilities, particularly in Orange County and Camp Pendleton. It was clear, however, that there were significant deficiencies in the capabilities of the offsite jurisdictions in this area. The June Interim Findings from FEMA cited a number of weaknesses and saw them as a "significant impediment to a total response capability." Although improvements were made thereafter, the FEMA evaluation in November indicated that some problems remained. (FF 15-22)

On this record, we do not find it necessary to determine whether the offsite organizations possessed the capabilities normally expected of them; we do find that their capacities are significant and that they would assist the Applicants in an emergency. We also find, however, that the Applicants, at least with emergency support from other utilities, can carry out all of the necessary radiological assessment and monitoring, both onsite and in the plume EPZ. Our ultimate finding is that any 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. (FF 25-29)

B. Other Contested Issues.

1. Notification to Offsite Response Organizations and Communications Among Emergency Personnel.

Contention 2A has two aspects: (1) the ability of the Applicants' personnel at San Onofre to communicate with the offsite response organizations, and (2) the ability of all response organizations to communicate with each other and their own personnel in the field.

The Applicants have both simple and sophisticated methods of communication. Communication on a continuous basis is available through a dedicated telephone system [the Interagency Telephone System (ITS) or "yellow phone"] to the offsite organizations; notification to NRC can be made on another dedicated telephone. In addition to the regular telephone system, the Applicants also have a microwave telephone system which can activate the State Warning Center in Sacramento; the Applicants can also make radio contact with the Marines at Camp Pendleton and the State Parks. (FF 4-10)

We received substantial evidence concerning the communications capabilities of the offsite response organizations. Orange County, the most important of the offsite organizations, has a highly sophisticated system capable of contacting all of the emergency agencies on a 24-hour basis. Most of the other offsite response and support agencies could also reach their personnel on a 24-hour basis. Should teams be sent into the field to monitor radiation, they could be reached by radio. (FF 11-23)

In order to establish reliability, systems must be tested. We heard testimony that provision has been made for the scheduled exercise of portions of the communications systems and emergency plans on a periodic basis, and of the commitment to inspect, inventory, and operationally check communications equipment on a quarterly basis. We note also that, with the exception of the "yellow phone" system, many of these communications systems are routinely used by the jurisdictions in the course of their normal activities.

The Intervenor advanced a number of criticisms of communications capabilities, some of which we discuss separately in our findings. Suffice it to say here that, as we view it, a balanced evaluation of the overall record gives us a reasonable assurance that communications requirements have been met. (FF 24-30)

2. Public Education and Information.

Contention 2C concerns the adequacy of the public education and information program. In the absence of an adequate education program, the public response to an emergency could be chaotic. NRC regulations provide for the dissemination of information to the public within the plume EPZ concerning how they will be notified and what their actions should be in the event of an emergency. 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.

The Board received extensive testimony on the Applicants' public education and information program. That testimony covered both the content of the program and the means of disseminating it. We also were told whom it would cover and how and when it would be updated. The program to acquaint the news media with the emergency plans was also presented to us, as were the plans for rumor control and points of contact for release of public information during an emergency. (FF 2-9)

The Applicants have worked closely with the principal local response organizations in developing the education and information program. The program will be a continuing one, to be repeated annually. It is designed for both residents and transients. The program includes posters given to business organizations, newspaper advertisements, announcements on cable

TV and local radio stations, presentations to neighborhood groups and organizations and distribution of information to new residents when they apply for electric service. Information will also be provided to residents and transients by means of telephone directory inserts, decals in phone booths and material placed in rooming establishments and hotels. (FF 13-19)

The principal means for providing specific information on responses to an emergency will be via an Emergency Response Pamphlet prepared by the Applicants. This Pamphlet contains information about the proper actions to be taken in an emergency. The Applicants also have prepared a Handbook which contains information about radiation and which explains how and why emergency response plans have been developed. The plans for distribution of both the Pamphlet and Handbook are designed to reach all those who live within the EPZ. (FF 10-12)

The Intervenor subpoenaed a number of witnesses, each of whom expressed some concern about the public education program. However, the Board found that the present program was carefully conceived and thorough, and would adequately meet those concerns. Each of these witnesses also testified that they would work with the Applicants to improve the public education program. (FF 24-29)

The Intervenor expressed criticism of the public education program in that no separate effort was being made to reach residents who speak only Spanish. (FF 30) The record does not reflect whether this is a significant concern in this area. However, we are referring the question to the NRC Staff to investigate and to take whatever action may be warranted. Apart from that, we have concluded that the public information and education program meets the applicable planning standard.

3. Emergency Notification and Instruction of the Public.

Offsite emergency planning officials, working with the licensee, must establish "means to provide early notification and clear instruction to the populace within the plume exposure pathway emergency planning zone." (10 CFR 50.47(b)(5)) The adequacy of these means at San Onofre is raised by Contention 2B. Generally speaking, this planning objective assumes that an ongoing public education program has already been carried out in the EPZ to explain the significance of a notification alert (usually by sirens) and what people should do next — the topic discussed in the preceding section. Satisfaction of this next planning objective then focuses on the physical and administrative means available to notify and instruct people in the plume EPZ — such as effectiveness of siren coverage, arrangements with radio and television stations, and the like.

Some aspects of this contention were uncontested. The Applicants have installed sirens throughout the plume EPZ designed to blanket that zone in

an emergency. When activated, each siren would produce a long, steady signal. Information already provided to people in the plume EPZ tells them, on such a signal, to turn on the radio or television for emergency information. (FF 3-10)

Should the sirens fail to function for any reason, there are alternative means to alert the public. Vehicles and helicopters equipped with loudspeakers are available from several sources. (FF 11)

Prewritten instructions for the public are available for use in an emergency. The primary means for instructing the public would be through the Emergency Broadcast System over cooperating radio and television stations. Arrangements have been made with the media for coordinated release of accurate information. (FF 12-17)

The Intervenors did not make a broad challenge to these notification and instruction arrangements, but they did advance several specific criticisms. As indicated in our discussion of the plume EPZ boundaries, we agree with the Intervenors that siren coverage should be extended to the "extended" EPZ, to include Dana Point and all of San Juan Capistrano. On the other hand, we are rejecting the Intervenors' arguments about notification of boaters and various problems with the Emergency Broadcast System. While there may be minor problems in these areas, the record as a whole provides the necessary "reasonable assurance" about the existing arrangements. (FF 20-27)

There is one matter on the present record — confirmation from the Staff that the sirens have been successfully tested. This must be received before Unit 2 goes to full power operations.³²

4. Emergency Response and Augmentation Capability.

Contention 2F concerns the ability of the principal response organizations to respond and to augment their responses on a continuous basis in the event of an emergency. The principal response organizations for San Onofre are Orange County, the Marine Corps at Camp Pendleton, the Pendleton Coast Office of the State Department of Parks and Recreation and the City of San Clemente. We heard testimony that each of these agencies has the capability to respond to an emergency at San Onofre and can augment that response on a continuous basis.

³² We recently received a copy of a letter, dated April 26, 1982, from the Mayor of San Clemente to the Commission questioning the adequacy of the siren system in various respects. We are issuing a separate Order with this Decision asking the Mayor and the parties to respond to certain questions. We are retaining jurisdiction of this narrow factual issue to determine what action, if any, should be taken on the basis of those responses.

The Intervenors included the City of San Juan Capistrano and the "School District" (presumably the Capistrano Unified School District) in their findings as being among the principal response agencies. The record does not support that finding. The City relies principally on the response resources of Orange County while the District relies principally on a combination of emergency response resources of the City of San Clemente and Orange County. (FF 2-5)

There is a great depth of response agencies, beyond the principal response agencies, which could become involved in a response to a radiological emergency at San Onofre. We heard extensive evidence on the numerous public and private, local, state and national organizations which could be called upon, if needed. This depth of support further guarantees both an adequate and continuing response. (FF 6-12)

Both the NRC Staff and a FEMA representative examined the capability of the principal response organizations to respond to an emergency and to augment the initial response on a continuous basis. Both concluded that the principal response organizations met the applicable planning standards. We agree. (FF 24-25)

The Intervenors, basing their findings largely on the state of affairs at the time of the May 13, 1981 exercise, were critical of capabilities of the response organizations, in various respects. We do not believe that these criticisms raise significant questions when viewed in the perspective of the whole record and in the light of ongoing improvements in response capabilities. (FF 19-23)

5. Training for an Emergency Response.

It is axiomatic that specific training should be required for persons expected to assist in a radiological emergency; that it should be tailored to the level of expertise expected in each area of responsibility; and that it should be effective. Periodic retraining to maintain skills should also be a part of the total training program. Contention 2G places in issue whether the training of response personnel for a radiological emergency has been adequate. Consideration of this issue falls logically into two categories: training of the Applicants' onsite personnel, and training of personnel from offsite response organization.

The adequacy of training of the Applicants' onsite personnel was not disputed. Training includes, for example, familiarization with equipment and procedures for communicating offsite. Personnel involved in accident assessment have had extensive nuclear power plant experience and training. (FF 2-6)

The record indicates that training of offsite personnel was less comprehensive. In an effort to bolster offsite training, the Applicants have

developed courses designed to train several kinds of workers in a radiological emergency. (FF 7-10)

The FEMA assessments of offsite training were generally critical. Training for radiation monitoring was an area of special concern. The record reflects, however, that progress has been made since the initial FEMA evaluation. (FF 11-13)

We concluded that the training program sponsored by the Applicants will be effective over time to correct any present training deficiencies. We are conditioning the operating licenses on Staff confirmation that necessary training of adequate numbers of offsite personnel has been completed with the Applicants' or a comparable program. Training of personnel for radiological monitoring could be of special concern because of the degree of technical expertise required. However, no concern arises in this case, because of the Applicants' ability to perform all necessary monitoring themselves. Our overall conclusion was that offsite training will be adequate, provided that the Staff confirmation of training occurred and that certain concerns of FEMA expressed in its last evaluation are satisfied (FF 14-19)

6. Plans for Reentry and Recovery.

Contention 2K addresses that time, after an evacuation, when plant conditions have been stabilized and the emergency condition no longer exists. The NRC regulation requires that "general" plans for recovery and reentry be developed. In recognition of the expected sequence and pace of events following an evacuation, the regulation does not contemplate the kind of detail in planning required for an emergency response.

The Intervenor's position is that the plans are either insufficient or nonexistent, and that the Applicants consider *ad hoc* planning alone to be sufficient. We find little support for this position in the record.

Unlike evacuation, reentry should not (at least in most cases) be constrained by time. Those things that will have to be done before the return of people to their homes is advisable will depend on the radiological conditions that exist in the area evacuated. In this sense, plans must — and should — be *ad hoc*. The offsite authorities would be the same for emergency response and recovery-reentry operations, so it is not a matter of organizing from scratch. Plans have been made and responsibilities assigned, so far as practicable, for determining levels of radiation or contamination. Levels of contamination will be assessed by the Applicants and the State Office of Emergency Services in order to determine whether they meet State standards for reentry. Local jurisdictions would presumably follow the State's guidance. We note that a spectrum of offsite planning exists in different jurisdictions, according to need, from no spe-

cific plans, (e.g., San Clemente, which expects to be instructed by the County and State) to Camp Pendleton, which views reentry simply as another "redeployment" — an activity with which they are quite familiar. (FF 8-13)

Onsite, activities will be directed toward making repairs, taking positive steps to prevent recurrence of another accident and returning the facility to a safe condition for renewed operations. The details and composition of the recovery organization that would be assembled by the Applicants would depend somewhat on the nature of the problems to be dealt with. (FF 4-7)

FEMA concluded that the planning of the offsite jurisdictions was "minimally adequate." The record reflects the existence and productive activity of the Interjurisdictional Planning Committee in this area. The Board concludes that, while detailed plans do not exist, each jurisdiction has addressed the question of reentry and that general plans are in place. Absent knowledge of the specific emergency and its consequences, we do not believe that much more is practical. (FF 15)

C. Uncontested Issues.

These issues (2E, I and J) are uncontested in that the NRC Staff generally supported the Applicants and the Intervenor did not propose any findings of fact or, on one contention, also proposed findings in support of the Applicants. Our findings on two of these contentions are, accordingly, brief and general; they are summarized below. The third uncontested contention presents a separate problem.

1. Offsite Emergency Operations Centers, Transportation and Communications Equipment.

In the event of an emergency, the Applicants would operate an offsite Emergency Operations Center ("EOC"). The EOC would serve as a central point where all of the response organizations could assess conditions and coordinate their activities. The Applicants have multiple and redundant communications equipment enabling them to contact all emergency agencies. Should normal access to San Onofre become restricted, the Applicants can transport personnel and equipment there by helicopter. The Applicants have other aircraft, as well as a large fleet of trucks and other vehicles. (FF 1-4)

Each of the offsite response organizations would also maintain a separate EOC. These organizations also have extensive communications and transportation equipment. (FF 5-8)

The existence of these facilities and equipment give the Board reasonable assurance that the applicable planning standard has been met.

2. Interim Emergency Operations Facility.

The Applicants are required to establish an Emergency Operations Facility ("EOF") from which evacuation and coordination of its activities are carried out during an emergency. The EOF also provides information to federal, state and local authorities during an emergency. The Applicants have established an interim EOF and have provided an extensive, largely redundant, communication system which connects the components of the interim EOF, the San Onofre nuclear station and the Emergency Operations Centers of the offsite response organizations. (FF 1-4)

An exercise was held on May 13, 1981 to examine the state of emergency preparedness for San Onofre. FEMA thereafter expressed "serious concern" about the interim EOF. The concerns identified included a lack of clear operating procedures, fragmentation of the facility, a lack of management direction communications, and the size and location of the facility.

These concerns were the bases for Intervenor's Contention 2I. However, the Intervenor effectively abandoned this contention after it was shown at the hearing that these concerns were being corrected. (FF 5-7)

Both the NRC Staff and FEMA reviewed the EOF and found the corrective actions since the May 13, 1981 exercise to be adequate to warrant a favorable finding on this issue. However, both thought that a demonstration to verify the adequacy of these corrective actions should be required. We agree, and are requiring such a confirmatory demonstration.

3. The Ingestion Pathway Emergency Planning Zone.

Contention 2J concerns the adequacy of methods, systems and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency in the ingestion pathway Emergency Planning Zone ("ingestion EPZ"). The ingestion EPZ is the area lying within a fifty-mile radius circle centered on the facility. Emergency planning concerns in that area focus primarily on the possibility of radioactive contamination of food and water.

The Applicants' proposed findings of fact on this contention are uncontested because the Intervenor has proposed no findings of fact. The Staff's proposed findings are generally consistent with those of the Applicants, with some reservations. If the record provided firm support for findings favorable to the Applicants, we might make such findings, as we have done with other uncontested contentions. But the record on this contention is decidedly equivocal.

The Applicants, for their part, have done about all that might reasonably be expected of them in this area. As we have found elsewhere (see pp.

1247-1250, below), the Applicants themselves have substantial capabilities to monitor and assess offsite radiation consequences. The Applicants, among other things, engaged a consulting firm to perform a study of the ingestion EPZ around San Onofre. The study identifies primary food pathways, farm commodity components, major open water reservoirs, and other relevant matters. The study quantifies the radionuclide ingestion pathways in the ingestion EPZ, the types of radionuclides likely to be released in different types of accidents, and potential radiation doses to humans from contaminated food supplies. Based on that study, the Applicants have completed a general plan and implementing procedures for ingestion EPZ planning at San Onofre. (App. Exs. #121, 152(g), 153(g), 159; Pilmer, Tr. 7388)

Notwithstanding these efforts by the Applicants, under the criteria set forth in NUREG-0654 and with which we agree, the lead role in emergency planning and implementation for the ingestion EPZ is given to the State. Section J II of NUREG-0654 contain a long list of criteria to be met by State plans. As of the time of the hearing last fall, the lead State agency (the Radiological Health Section of the State Department of Health Services) was in the process of finalizing a draft State plan for the ingestion EPZ. Thereafter, however, the State agency faced the additional task of "working with the counties to develop the county input into this total ingestion pathway process." (Kearns, Tr. 10,187) The draft State plan is not in evidence.

As previously noted, under the rule FEMA has the principal responsibility for reviewing the adequacy of offsite plans, including any State plan for the ingestion EPZ. FEMA findings are to be given the effect of a rebuttable presumption. (10 CFR 50.47(a)(2)) The Interim Findings of June 3, 1981, noted that "no ingestion pathway sampling was observed during the exercise due to omission from the scenario and a lack of capability throughout the jurisdictions." The FEMA witness at the hearing, Mr. Nauman, testified that "As yet the methods, staffing and systems and equipment relating to ingestion pathway response have not been clearly identified or demonstrated." (Nauman testimony, August 24, 1981, p. 14, Tr. ff. 10,372) The updated FEMA findings of November 13, 1981 (at p. 5) say specifically in this regard only that "An Ingestion Pathway sampling drill should also be demonstrated when State and local procedures are resolved." The full import of these FEMA comments is not entirely clear. But it is clear that FEMA is critical of certain aspects of ingestion EPZ planning and that, overall, that planning did not meet with FEMA's approval, at least as of the close of the hearing record.

We agree with the Staff that "the record reflects the evolving nature of the planning in the ingestion pathway area." We do not accept the Staff's

proposal, however, that we find a reasonable assurance that the methods, systems, etc., for the ingestion EPZ "will comply" with 10 CFR 50.47(b)(9). Although prospective findings of future compliance can be made on an appropriate record, we do not believe that the record developed here supports such a finding.

Were we required to make dispositive findings on this record on this contention, they might well be, at least in part, adverse to the Applicants. However, we are not required to make such findings because this issue is no longer contested. Moreover, now that Board findings are not required, we believe that, in fairness, the issue should be resolved informally by the Staff outside of the hearing process.

This is a case where the Applicants apparently did everything they could to satisfy a planning standard and to assist the offsite jurisdictions in doing the same. Satisfaction of the standard was not satisfactorily demonstrated at the hearing solely due to delays in planning beyond the Applicants' control. The record suggests that there may have been substantial improvements in this area since the hearing. However, to require further hearings on this issue at this late stage probably would be unduly prejudicial to the Applicants. We conclude, therefore, that the adequacy of the measures taken to meet Contention 2J are properly left to informal resolution by the Staff.

D. Federal Emergency Management Agency Findings and Testimony on Offsite Plans.

1. Background.

The Commission's emergency planning rule provides for the Federal Emergency Management Agency ("FEMA") to review State and local emergency plans (the "offsite" plans) to determine whether they are "adequate and whether there is reasonable assurance that they can be implemented." In an NRC licensing proceeding like the present one, "a FEMA finding will constitute a rebuttable presumption on a question of adequacy and implementation capability." 10 CFR 50.47(a)(2).

An applicant for an operating license is required to submit emergency plans for the State in which the facility is located and for local governmental units located wholly or partially in the plume EPZ. (10 CFR 50.33(g)) In this case, plans were submitted for the State of California and for the following local governmental units: Orange County, San Diego County, City of San Clemente, City of San Juan Capistrano and the Capistrano Unified School District, the Marines at Camp Pendleton, and the State Department of Parks and Recreation (Pendleton Coast Office). An Interagency Agreement and Evaluation Procedure, jointly developed by the

local governmental units as a supplement to their plans, was also submitted.

Pursuant to a Memorandum of Understanding between the two agencies, the NRC Staff asked FEMA to provide it with findings and determinations whether the offsite plans for San Onofre are adequate and capable of implementation. Should formal FEMA findings and determination not be available, the Staff requested "an interim FEMA evaluation on the state of offsite preparedness."³³

On June 3, 1981, FEMA supplied the NRC with its "Interim Findings and Determination Relating to the Status on State and Local Emergency Preparedness for the San Onofre Nuclear Generating Station (Units 2 and 3)." (Int. Ex. #15, cited as "Interim Findings") FEMA found at that time that the plans themselves are "minimally adequate." FEMA also found, however, that "until corrective actions have been taken, the offsite capability for implementation of the plans is not considered adequate."

The Interim Findings themselves, consisting of 1½ pages, are almost entirely conclusory, with virtually no particulars about planning deficiencies. They refer to an attached "FEMA Region IX Evaluation" for "additional details." That document does provide some additional detail, but it is also quite conclusory in parts and reflects little effort to rank order deficiencies that appear to range from the serious to the trivial.³⁴

In this situation, the Applicants and the local emergency planning officials were understandably anxious to clarify FEMA's deficiency findings, and to determine what specific corrective actions would be required to obtain FEMA's approval. Following a series of meetings involving the Applicants, the local officials and FEMA representatives, the Applicants wrote a letter to the NRC Staff setting forth seven deficiency areas in which corrective actions would be taken, a summary of planned actions, and a schedule for completion of each action. (App. Ex. #144) Thereafter,

³³ Memorandum from Grimes, NRC, to Dickey, FEMA, March 4, 1981. Formal findings and determinations are made by FEMA on the adequacy of plans of local governmental units, such as cities and counties, only after the State plan has been reviewed and approved by FEMA. Since the California plan was still under development, the FEMA findings on the local plans near San Onofre were labeled "interim" findings. As we view it, however, the lack of an approved State plan has no necessary bearing on and therefore does not detract from the rebuttable presumption that attaches to a FEMA finding on a local plan. (Statement of Counsel for FEMA, Tr. 523-24)

³⁴ Two other FEMA documents warrant reference here — the Regional Assistance Committee ("RAC") review of the plans and the FEMA Region IX Exercise Evaluation overview of the May 13, 1981 exercise at San Onofre. These are Intervenor Exhibits #13 and #14. The RAC review of the plans was essentially superceded by the finding of minimal adequacy of the plans in the Interim Findings. Although containing more detail, the Evaluation overview covers essentially the same ground as the Interim Findings.

FEMA confirmed that the Applicants' letter did set forth FEMA's "major concerns" and what needed to be done to correct them. (App. Ex. #146)

The contentions in this case were being developed at about the same time as the list of FEMA "major concerns." (See Tr. 3491-500) The "concerns" and the contentions are similar because they were derived in whole (the concerns) or in part (the contentions) from the Interim Findings. Consistency between a contention and a concern carried with it evidentiary significance by virtue of the NRC rule giving a FEMA finding the weight of a rebuttable presumption in litigation. For example, the Interim Findings expressed "critical concerns" about offsite radiation monitoring. This meant that the Intervenor's case on Contention 2H (concerning such monitoring) had a rebuttable presumption in its favor, merely on the strength of the June 3 findings. Conversely, a FEMA finding favorable to the Applicants — *e.g.*, that the emergency plans themselves are "minimally adequate"³⁵ — could have resolved plan (as distinguished from implementation) contentions in the Applicants' favor, in the absence of substantial evidence to the contrary.

2. Effect of the Rebuttable Presumption.

The practical effect of the rebuttable presumption created by the rule is not necessarily very great, however, nor was it in this particular case. We consider the effect of particular FEMA findings and other evidence on individual contentions in our detailed findings of fact in Part IV, below. In this section, we outline the development of the FEMA positions and explain our thinking in evaluating them as a context for those findings.

To begin with, it bears emphasis that, under the rule, a FEMA finding (or "interim" finding) only gives rise to a *rebuttable* presumption. Such presumptions can have the effect of deciding a question only in the absence of persuasive contrary evidence.³⁶

In addition to the applicant's rebuttal evidence, FEMA itself can supply subsequent evidence inconsistent with an earlier negative finding. In the present case, the FEMA Interim Findings spoke as of May 1981. The hearings were being held in September. The Applicants and the offsite jurisdictions had been in the process of responding to FEMA's criticisms for some three months. As we viewed it, the best available evidence on the current status of emergency plans and FEMA's view of them was the most current evidence available from a knowledgeable FEMA witness. The Staff

³⁵ Largely because of this general finding of "minimal adequacy" of the paper plans themselves, the hearing focused almost exclusively on implementation issues.

³⁶ See generally Wright & Graham, Federal Practice and Procedure, §5126 (1977)

called Mr. Kenneth Nauman of FEMA, a qualified expert in emergency planning.³⁷ In some respects, Mr. Nauman's testimony was based on later information and conflicted with the earlier Interim Findings. When that happened, we reasoned that the subsequent contrary opinion of an expert witness might well prevail over an agency's official views, whether wrong or simply outdated.

The testimony and cross-examination of a knowledgeable FEMA witness was particularly important in this case. As we pointed out earlier, the FEMA Interim Findings were very cryptic. It was often difficult to gauge the seriousness of a problem, or even to know in which of several jurisdictions a problem had been found to exist.³⁸

In any event, as matters developed there was very little basis in this case for drawing a distinction in the weight to be given the Interim Findings — which bore the imprimatur of FEMA National Headquarters — and the testimony of a regional office witness, Mr. Nauman. Mr. Nauman's testimony, in which he stated his then-current view on each contention in the case, had been reviewed and approved by the National Headquarters. (Tr. 10,400-01) Although perhaps not FEMA "findings" in the narrow technical sense, that is more of a distinction than a difference on this record. Moreover, the record shows that Mr. Nauman was the regional FEMA analyst on the San Onofre plans and the principal author, not only of the regional documents on which the National Headquarters "Interim Findings" were based, but also of the Findings themselves. (Tr. 10,911-14)

3. Completion of Proposed Corrective Actions.

The Applicants' schedule to correct all significant deficiencies in the offsite plans called for completion of corrective action by October 15,

³⁷ Mr. Nauman's qualifications are set forth following his testimony, which follows Tr. 10,371.

³⁸ There is an analogy between FEMA findings and advice letters on particular reactors from the Advisory Committee on Reactor Safeguards (ACRS). Typically, both of these documents are relatively brief and cryptic. Section 189(b) of the Atomic Energy Act requires that the ACRS letter be "made a part of the record of the application." However, in recognition of the practical impossibility of having the entire Committee appear for cross-examination in hearings, or having one member speak for this collegial body in explanation of its report, the Commission has long taken the position that the ACRS report is not substantive evidence of the facts asserted therein. (*Consumers Power Co.* (Midland Plant), ALAB-123, 6 AEC 331, 340 (1973)) Here, the opposite approach has been taken in the rule to a FEMA finding. Not only is it substantive evidence of what it states, but it also has a rebuttable presumption attached to it. Fairness calls for the production of a FEMA witness to testify, at least where the FEMA findings are as negative and cryptic as they were in this case.

1981. Although considerable progress was made, some items apparently were not completed by that time.³⁹ In any event, when the hearing was held in late August and September, several corrective action items remained open. In an effort to close those gaps, FEMA and the NRC Staff offered two brief pieces of supplemental testimony by Mr. Nauman. The first referred to the corrective actions being taken and concluded that:

If all of the deficiencies are corrected, FEMA will be able to render a finding of adequacy.⁴⁰

In a similar vein the second piece of testimony was, in its entirety, as follows:

Q. Are you familiar with the current National Office Views of the Federal Emergency Management Administration as to the adequacy as to the offsite Emergency response planning at SONGS II and III?

A. Yes.

Q. What is that view?

A. Given the commitment of Southern California Edison and local jurisdictions to the correction of the deficiencies noted in the FEMA interim findings of June 3rd, 1981, and their continuing efforts to correct these deficiencies, it is believed that, provided the needed corrective actions are completed, there is a reasonable assurance adequate protective measures can and will be taken in the event of a radiological emergency at SONGS II and III.

The Board overruled objections to this testimony on the ground that it was an improper effort to "impeach" the Interim Findings of June 3. (Tr. 10,422) However, this testimony becomes somewhat ambiguous on close reading. Read literally, it is tautological: all it really seems to say is that FEMA will find the plans to be adequate, if and when the plans are adequate.⁴¹ But we reject this reading of the testimony because it would then serve no useful purpose. In the light of Mr. Nauman's testimony as a whole, we read the quoted testimony as a "bottom line" determination that FEMA is satisfied with the adequacy of emergency planning for San Onofre, subject only to the completion of the previously agreed upon corrective action items. Implicit in this interpretation is a FEMA judgment that the corrective action items are fairly simple and straightforward, not

³⁹ This is reflected in the FEMA Update Evaluation of November 1981, discussed at pp. 1217-1219, below.

⁴⁰ See Direct Testimony of September 16, 1981, Tr. ff. 10,420.

⁴¹ Some confirmation for this reading was provided by Mr. Nauman, who testified that FEMA would still have to evaluate the adequacy of the corrective actions after they are completed. (Tr. 10,407-09)

likely subjects of debate. Otherwise, FEMA presumably could not render a favorable opinion in advance.

This FEMA testimony points up the practical problem that confronts the San Onofre Applicants and others like them who may not have had enough time to come into full compliance with the new emergency planning rule before hearings on their operating licenses. They must demonstrate to a board a "reasonable assurance" of adequacy based in part upon future actions. The Commission has recognized this problem and has addressed it in part by amending the rule to provide for full-scale emergency preparedness exercises after the hearing. (See 46 Fed. Reg. 61134, amendment to 10 CFR 50.47(a) and Appendix E) In so doing, the Commission recognized that "the findings on emergency planning required prior to license issuance are predictive in nature and do not need to reflect the actual state of preparedness at the time the finding is made." A licensing board is to find a "reasonable assurance . . . that there are no barriers to emergency planning implementation . . .," but that consideration "can be adequately accounted for by predictive findings." *Id.* at 61135.

Consistent with the concept of predictive findings in the emergency planning area, it has long been recognized in other areas of reactor regulation that not all matters have to be definitively resolved on the hearing record. Certain matters may be "left for the Staff to resolve following the hearings." (*Consolidated Edison Co. of New York* (Indian Point Station, Unit 2), CLI-74-23, 7 AEC 947, 951-952 (1974)) These matters typically are of a minor nature and/or are such that on-the-record procedures, including cross-examination, would be unlikely to affect the result. For example, in this case we are leaving for Staff resolution the question whether informational material for the general public should be printed in both English and Spanish. This was a very minor issue in the case; although there was an opportunity to present evidence, no direct evidence was presented.

As another example, we are also leaving for Staff confirmation whether certain emergency equipment has been purchased and delivered to the offsite response organizations. To be sure, such equipment can be very important in a real emergency. On the other hand, delivery of emergency equipment is not a subject on which further hearing and cross-examination is likely to be productive, because the details about it are unimportant. For our purposes, a four-wheel drive vehicle is a four-wheel drive vehicle, whether it is a Ford or a Chevrolet. What matters to us at this point is a Staff confirmation that equipment suitable for its emergency purpose has been delivered.

But there are limits on the approach of leaving an open matter for Staff resolution.⁴² To postulate the extreme example, a board might find after an on-the-record hearing that an emergency plan was deficient in virtually all respects, and then leave correction of the defects to Staff resolution, without further hearing. Such an approach would effectively deprive an intervenor of an on-the-record hearing on the adequacy of the emergency plans supporting the license, in violation of Section 189a of the Atomic Energy Act.

There is one planning defect in the present case on which an opportunity for further hearing is required — the adequacy of the arrangements for medical services for the public in the plume EPZ. Questions of adequacy on a subject of this complexity involve large elements of judgment and expertise. These are the kinds of questions for which cross-examination is required — in the words of the Administrative Procedure Act⁴³ — “for a full and true disclosure of the facts.” We are retaining jurisdiction to review the adequacy of the Applicants’ further arrangements for medical services, and, if duly requested, to hold a further hearing thereon.

4. The Motion to Reopen.

Following the hearing the Board entered an Order closing the record, subject to receipt and inclusion of certain documents, including further FEMA findings and determinations on the San Onofre plans, then anticipated about two months later.⁴⁴ We said that we would consider such

⁴² In the *Indian Point* decision, the Commission stated that “the ‘post hearing’ approach should be employed sparingly and only in clear cases.” 7 AEC at 952. At the Board’s request, the NRC Staff reviewed each open corrective action item on the record and concluded that they were straightforward matters that could be left for post-hearing resolution by the Staff. (Tr. 11,158-64) The Staff provided a similar analysis of the deficiencies noted in the FEMA Update Evaluation in their opposition to the intervenors’ motion to reopen, discussed below. See Affidavit of Brian K. Grimes attached to the Staff Response. The Board generally agrees with the Staff’s analyses.

⁴³ 5 U.S.C. 556(c).

⁴⁴ Order of October 6, 1981. In setting the time for hearing on the emergency planning issues, the Board considered whether to wait until after further FEMA findings were available. The Applicants and the Staff argued against that approach and for an early hearing, earlier than the date we later set. At that time (early August) it was uncertain when further FEMA findings would be available, and it appeared that much of the Applicants’ proposed corrective actions would be well underway or completed before then. Moreover, it seemed likely that a hearing after the further FEMA findings could not be completed before late 1981 or early 1982. We had already planned to devote that time to preparation of a Partial Initial Decision on seismic issues. This indicated that a later hearing on emergency planning might have delayed this decision into the summer of 1982. In these circumstances, we concluded that,

(CONTINUED)

findings and that any party could "move to reopen the record for further hearings for good cause shown." We cautioned, however, that —

Such a showing 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.

Following receipt of the November FEMA Update Evaluation (the "Updated Findings") the Staff moved to supplement the record by its inclusion. As contemplated by our Order, that pending motion is now granted.⁴⁵ On the basis of the Updated Findings, the Intervenors have moved to reopen the record for further hearings and to supplement their findings of fact. They argue that the Updated Findings cast doubt on the Applicants' promises to correct deficiencies in the plans. The motion is opposed by the Applicants and the Staff.

We note first the limited purpose for which we are considering the Updated Findings. We are guided by the *Diablo Canyon* low-power review, where the Commission said of a similar post-hearing FEMA evaluation:

This information bears directly upon the adequacy of emergency planning at Diablo Canyon. It is neither necessary nor reasonable that we be required to ignore it in determining whether issuance of the low-power license is in the public interest. In this case, significant negative information could have alerted the Commission to substantial problems not developed in the record (such as subsequent developments and areas not covered in the hearing). The Commission concluded this information did not raise such issues. The Commission considered the information only to this extent and did not consider whether it strengthened the record.⁴⁶

This Commission guidance is applicable here. Although the Updated Findings point to various remaining deficiencies and list certain unfinished corrective actions, there is no new information in that document; no "red flags" are raised. All of the areas of deficiency were explored on the record at the hearing. We merely note the fact that the positive parts of the

assuming favorable rulings for the Applicants, a later hearing probably would have unnecessarily delayed operations of Unit 2. This seemed to us to be contrary to the thrust of the "Statement of Policy on Conduct of Licensing Proceedings." (46 Fed. Reg. 28533)

⁴⁵ Staff Motion to Supplement the Record, dated December 2, 1981. The Updated Findings are identified as Staff Motion 14.

⁴⁶ *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant), CLI-81-22, 14 NRC 598, 601 (1981).

Updated Findings are consistent with our positive findings based upon the hearing record.⁴⁷

The Intervenor's argue that the Applicants' failure to complete all corrective actions prior to the Updated Findings undermines any reasonable assurance that those actions will be taken in the future. (Motion, p. 5) We reject this contention. Our "reasonable assurance" rests upon the fact that all necessary corrective actions, as specified in the conditions we are attaching to the licenses, will be taken before a full-power license is issued for San Onofre, Unit 2. If that is not done, no full-power license will issue. In that sense, an applicant's good faith (or lack of it) is irrelevant. Only performance counts. Quite apart from that, we also reject the claim that the Updated Findings indicate bad faith on the part of the Applicants. The Applicants dispute that contention, point-by-point, and their discussion seems persuasive. More fundamentally, we believe that an applicant's attitude toward meeting its emergency planning obligations is more appropriately assessed on the record as a whole, which includes cross-examination of company officials. From that perspective, the Applicants made a distinctly favorable impression on the Board. They have conscientiously and competently sought to meet their emergency planning obligations, and the great bulk of those obligations have been met. The relatively few corrective action matters shown as unfinished in the Updated Findings do not raise any questions in the Board's mind about good faith.

In light of the foregoing discussion, there is nothing to indicate that the outcome of this proceeding would be affected by reopening.⁴⁸ In *Diablo Canyon*, the Commission saw no reason to reopen the case for further hearings. Neither do we. The motion to reopen is denied. The Intervenor's motion to supplement their findings of fact is also denied. Particularly in view of the limited purpose for which we are considering the Updated Findings, further findings from the parties are unnecessary.

IV. FINDINGS OF FACT

A. Determination of the Plume Exposure Pathway Emergency Planning Zone.

1. Development of the Applicants' Recommendation for the San Onofre Plume EPZ. The plume EPZ for San Onofre is depicted in most of the

⁴⁷ We do reply in part on the Updated Findings for our findings on Contention 2I because that contention is uncontested. See pp. 209-210.

⁴⁸ See *Public Service Co. of Oklahoma* (Black Fox Station), ALAB-573, 10 NRC 775, 804 (1978).

offsite emergency plans as a 10-mile radius semicircle centered on the facility, as shown in Figures 3 and 4 after page 12. As shown in these figures, its boundary begins on the coast ten miles northwest of the facility near San Juan Creek, proceeds inland maintaining the 10-mile radius, and ends 10 miles southeast of the facility, about five miles northeast of Oceanside.

2. Looking at the plans themselves, the northwest portion of the plume EPZ along the coast, the only populated portion except for parts of Camp Pendleton, is depicted in the Interagency Agreement and Evacuation Procedure as in Figure 1. The EPZ is depicted by an identical figure in the emergency plans for the Cities of San Clemente and San Juan Capistrano. The County of San Diego plan (in Figure XIII-1) depicts the southern portion of the EPZ, as in Figure 2. The Emergency Resource Plan for Camp Pendleton does not include a comparable graphic figure depicting a 10-mile radius EPZ. However, references to a 10-mile radius zone in the plan and in testimony make it clear that such a zone is deemed applicable in Camp Pendleton. (Plan, p. K-3-2; Tr. 9322) Similarly, the Response Plan for the Parks in the Pendleton Coast Area operated by the State Department of Parks and Recreation does not contain a graphic figure depicting the plume EPZ. It appears, however, that all of the affected beaches are within the 10-mile zone. The plan specifies that all of the beaches it covers may be evacuated in appropriate circumstances. (Plan, p. II-2) Therefore the exact location of the outer boundary of the plume EPZ is not significant.

3. The only apparent deviation from the uniform 10-mile radius zone, as reflected in the local emergency plans in the record, is in the Emergency Response Plan for Orange County. That plan establishes an "Emergency Planning Zone" similar to the uniform 10-mile plume EPZ in the other plans, except that it is somewhat larger and includes Dana Point and all of San Juan Capistrano to the north, and all of Camp Pendleton to the south. These differences are discussed in greater detail hereafter. (Orange County Plan, p. I-3, Figure 1-1)

4. Although, as just described, the plume EPZ ultimately determined for San Onofre is a 10-mile radius semicircle around the facility,⁴⁹ that determination did not result from a simple spin of the draftman's compass on a map, without regard to local conditions. On the contrary, extensive consideration of local conditions by the Applicants, their consultants, local officials and their staffs led to the conclusion that a 10-mile circle was

⁴⁹ As discussed in paragraph B.17 below, a minor exception was made to avoid intersecting a small segment of Riverside County.

most appropriate under the circumstances. As one would expect, the starting point was to draw a 10-mile radius circle around San Onofre. But that was only a starting point. The Applicants went on to perform map studies and visual reconnaissance of the entire area, taking into account existing potential boundaries, land characteristics and possible evacuation routes. Apart from Camp Pendleton (where special considerations obtain), the only populated areas on or near the 10-mile line were the City of San Juan Capistrano (bisected by the line) and the nearby incorporated area of Dana Point (immediately north of the line).

5. It happens that San Juan Creek, an easily recognizable land feature, flows very near the 10-mile line. The creek creates a natural open space between residential communities about $\frac{1}{4}$ mile in width and not subject to future encroachment. The Applicants concluded that San Juan Creek would make a feasible boundary for that segment of the plume EPZ located between the ocean and Ortega Highway. The creek line would traverse the populated areas of concern and then link up with the 10-mile, as can be seen in Figure 1. Apparently because the creek runs close by and parallel to the 10-mile line, the boundary of the plume EPZ is shown simply as the 10-mile line. (Written testimony of Ernest Murri at pp. 7260-61; David Pilmer at p. 7370)

6. In addition to map study and visual reconnaissance, the Applicants also considered the levels of risk associated with San Onofre compared to levels of risk in the Reactor Safety Study ("RSS") that were considered in establishing the "about 10 miles" criterion in the NRC rule. Local atmospheric dispersion characteristics, including terrain effects and meteorological statistics, and local demography were also considered. Analysis of each of these factors supported the conclusion that the plume EPZ need not be larger than 10 miles. (Written testimony of David Pilmer, pp. 7368-69)

7. The SAI Study of California nuclear power plants commissioned by the State Office of Emergency Services was published in mid-1980. The Applicants retained a consulting firm to review the study and to determine whether the data and methodology used in the report, appropriately interpreted, verified the conservatism of the plume EPZ then being developed for recommendation by the Applicants to local officials. Mr. Keith Woodard, a well-qualified expert employee of the consulting firm, performed the review and testified at the hearing. His basic approach had been to compare the data, methods and results used in the SAI Study with those used by the NRC in the Reactor Safety Study and in subsequent development of the 10-mile EPZ rule. Mr. Woodard's analysis indicated, among other things, that the probability of exceeding large whole body radiation doses from a core melt accident at any given distance is signifi-

cantly lower for San Onofre than for the sites used in the RSS. Thus, insofar as the RSS was the technical basis for the planning rationale used in establishing the plume EPZ rule, the results of the SAI Study show that planning rationale to be conservative for San Onofre. Mr. Woodard's analysis also showed that the probability of core melt accidents for San Onofre found in the SAI Study would be the same, within the accuracy of the calculations, as the probability of core melt accidents from the RSS used as the basis for the NRC rule. He testified that proper evaluation of the calculations in the SAI Study supports establishment of a plume EPZ at San Onofre equal to or less than a radius of ten miles. Mr. Woodard concluded with his professional opinion that, in addition to the SAI Study, his analysis had included conservative consideration of local conditions of meteorology, demography and land characteristics.⁵⁰ His professional opinion on the subject was made known to emergency planning officials in San Diego and Orange Counties. (Written testimony of Keith Woodard, pp. 7330-38)

8. Mr. Woodard's testimony about the SAI Study and its implications for a 10-mile plume EPZ for San Onofre was not controverted. The Board finds Mr. Woodard's testimony persuasive and adopts the substance of his statements, as described in the preceding paragraph.

2. Adoption of the Plume EPZ Boundary by Local Officials.

9. Based on the field studies and analyses we have described, the Applicants presented their recommendations for a plume EPZ to local emergency planning officials. Following discussions and some modifications, local emergency plans, including plume EPZs, were duly adopted by the local officials.

10. For various reasons, the exact location of the plume EPZ boundary in some plans is unimportant. This was true in the case of San Clemente, for example, because that town is only about five to seven miles from the reactor, and therefore it is necessarily within a plume EPZ of "about ten miles." The exact location of the EPZ boundary was also unimportant in the case of San Diego County for the different reason that there is no significant population in the county (excluding people on Camp Pendleton) on or about the 10-mile line. The populated area in San Diego County closest to San Onofre is Oceanside, which is about 15 miles southeast of San Onofre. (Tr. 9284) There is nothing in the record

⁵⁰ These items are taken from Contention 3, which is quoted above and which is, in turn, based upon the factors listed in the NRC rule. Since we see no difference between "land characteristics" and "topography" in this context, we omit the latter as redundant, although it is included in the rule and the contention.

suggesting that the "about 10 miles" standard should be stretched to include that city. (James Hunt, Tr. 9263-64)

11. In fact, the only offsite area near the 10-mile radius where the exact location of the plume EPZ might make a significant difference is in the populated northwest sector in Orange County in and around San Juan Capistrano. As noted previously, the 10-mile line in that area bisects San Juan Capistrano and leaves the populated area of Dana Point, immediately to the north, out of the plume EPZ altogether. (See Figures 3 and 4 on pp. 1179-1180, above)

12. Responsible officials in Orange County and San Juan Capistrano did not agree with the Applicants' initial recommendation for a 10-mile zone, apparently to be understood as bounded by San Juan Creek in that area. They took the position that all of the populated areas across the creek but otherwise contiguous should be included in the plume EPZ. Following discussions, a compromise position was agreed to among the Applicants and the local officials. Fully effective siren coverage would stop at the 10-mile line. However, all other aspects of planning, notably evacuation, public information, and communications would extend to the contiguous populated areas of San Juan Capistrano and Dana Point. (Testimony of David Pilmer, pp. 17-19; Cynthia Ferguson, Tr. 8702-30)

13. We did not receive testimony from representatives of all the offsite jurisdictions about the circumstances surrounding the development of the plume EPZs in their plans, nor was that necessary, in view of the insignificance of that determination in some cases. The record in that regard reflects two things: (1) the Applicants were active in developing a suggested plume EPZ and in discussing that and other technical aspects of the plans with local officials (FF 7-10; testimony of J. W. Hunt, Tr. 9262; Cynthia Ferguson, Tr. 8702, 8724-27); (2) where the issue was significant, the local officials exercised their independent judgment in developing a plume EPZ for their plans. This is most clearly borne out by the testimony of Egbert Turner, the chief emergency management official of Orange County.⁵¹ Mr. Turner was directly involved in the plume EPZ determination for the Orange County plan. He noted that Orange County was trying to conform to the plume EPZ criteria in NUREG-0654, stressing that—

In our plans we have incorporated all of the population areas. We haven't split any towns or split any cities or broken up any population areas. So our zone extends to about 12-½ miles from

⁵¹ Mr. Turner is the most important civilian offsite emergency management official in this case. Apart from Camp Pendleton personnel, most of the people who might have to be evacuated in a San Onofre emergency live in Orange County.

possibly about 8 miles, to take in all of the population areas. (Tr. 8910)

Although population was the primary factor, Mr. Turner also described how other site-specific factors were taken into account, giving as specific examples local meteorology and potential evacuation routes. (Tr. 8940-42) Orange County officials worked both with representatives of the Applicants and the State OES in developing their plan. (Kearns, Tr. 10,163)

14. The foregoing findings establish that the factors referred to in the 10-mile EPZ rule (10 CFR 50.47(c)(2)) that were relevant in the circumstances of this case were considered by the Applicants, the responsible local officials, or both. In cases where primary consideration was undertaken by the Applicants, as with analysis of the SAI Report, the results of those efforts were communicated to the local officials and presumably taken into account by them. Conversely, the record does not indicate that any relevant factor was overlooked in establishing the plume EPZ. Both the Applicants and the NRC Staff support these conclusions.

3. Intervenors' Proposed Findings Concerning the Plume EPZ.

15. The Intervenors' proposed findings support Contention 3, arguing that the plume EPZ was mechanically set at 10 miles, without regard to local conditions. (IF 157) The preceding findings address the major thrust of that argument. The following findings address other aspects of the Intervenors' position on the plume EPZ.

16. The Intervenors contend that the Applicants looked to site-specific characteristics "only to decrease the size of the EPZ," referring to the San Juan Creek area and the exclusion of a small portion of Riverside County from the EPZ. (IF 159) The record does not support these claims. In the San Juan Creek area, using the creek as the boundary line instead of the 10-mile line results in a net expansion of the EPZ. It is true, as the Intervenors point out, that the 10-mile line extends for a short distance, about ¼ mile, beyond San Juan Creek, thereby subtracting a small area near the beach from the EPZ. However, the 10-mile line falls short of San Juan Creek between Highway 5 and Ortega Highway, resulting in the addition of a much larger area to (and a net gain for) the EPZ.

17. The Applicants excluded Riverside County from the EPZ because only a very small segment of that County (less than ½ square mile) lies within 10 miles of the reactors. (See Figure 1 on p. 1170) Under the Commission's rules (10 CFR 50.33(g)), a complete emergency plan for a local "governmental entity" (e.g., a city or county) must be submitted as part of the application for an operating license if that entity is "*wholly or partially* within the plume exposure pathway EPZ (emphasis added)." By contrast, if the local governmental entity is within the 50-mile ingestion

EPZ, only the State plan needs to be submitted; no local plans are required. The apparent assumption underlying the requirement for a plan from an entity, such as a county, "partially" within the plume EPZ is that there will be some significant number of people in that area who may have to be evacuated with county resources. There is such an arrangement, for example, between the town of San Juan Capistrano in Orange County and the County government. (Tr. 8713) But if that is not the case, requiring the county to develop an elaborate emergency plan would be unwarranted. Here, the record showed that the small segment of Riverside County in question was remote and uninhabited. (Written testimony of David Pilmer, p. 7370) In these circumstances, contrary to the Intervenors' suggestion (IF 166), there was no federal requirement that the Applicants consult Riverside County about the plume EPZ.

18. The Intervenors point out that only two small segments of San Diego County are located in the plume EPZ. (IF 171) Like the small segment of Riverside County, these San Diego County segments are mountainous back-country areas without roads or people. (Tr. 9264) The Intervenors argue that because San Diego has developed an emergency plan, so too should Riverside County. On this record, we reach the opposite conclusion. The San Diego segments, like the Riverside segment, could have been excluded from the plume EPZ as *de minimis*; if that had been done, there need not have been a San Diego plan submitted in this proceeding.

19. The Intervenors also express concern about adherence to a 10-mile plume EPZ in Camp Pendleton, where the line would cut through the Camp. They cite testimony by Mr. Kearns, Director of the State Office of Emergency Services, to the effect that all of Camp Pendleton should, in his opinion, be included in the plume EPZ. (Tr. 10,152) The Intervenors describe a purely hypothetical accident (there is nothing in the record about this hypothesis) that they envision as happening to the Marines in an evacuation carried out under the present plan. (IF 172)

20. The record dispels any concerns on these scores. The Director of the State OES, Mr. Kearns, did not give any reason why all of Camp Pendleton should be included in the plume EPZ. Col. Wallace, the official responsible for emergency planning on Camp Pendleton, testified that it would be possible to completely evacuate the 10-mile EPZ, while keeping all Marine personnel on the camp. (Tr. 9323) This would enable them to maintain a constant state of military readiness, a readiness that would be impaired if they were required to evacuate the Camp entirely. Col. Wallace described the considerable capabilities of the Marines to transport themselves, their dependents, and, if necessary, other people, over land (with or without roads or bridges), on the sea, or through the air, on short

notice, and at any hour of the day or night. (Tr. 9326-27, 9341-43, 9378-82) The Marines have available special vehicles and other equipment, including clothing protective against radioactivity. (Tr. 9363) Indeed, the Marines at Camp Pendleton are probably better able to cope with a radiological emergency than any other group in the country of similar size. The Board does not believe that the kind of accident hypothesized by the Intervenors could impair the Marines' ability to protect themselves and their dependents in the event of a radiological emergency. The Board finds that the plume EPZ in Camp Pendleton is appropriately placed where it now is, at about 10 miles.

21. The Intervenors point to certain inconsistencies in plume EPZs among the plans. They argue that the plume EPZs for San Onofre should be standardized — *i.e.*, the boundaries should be the same in all of the plans. (IF 150, 155) As a general proposition, the Board agrees. Uniformity among plans serves to prevent possible confusion among officials in different jurisdictions and should help to ensure that the lines are drawn in the right places.

22. Some variations among EPZ boundaries may be inevitable and harmless. As we have just discussed, the Marines' plume EPZ for Camp Pendleton differs from the State's EPZ, which would include all of Camp Pendleton. In that case, however, the people involved — the Marines — are not dependent on resources from another jurisdiction to take them out of harm's way. There is little need for coordination between Camp Pendleton and the civilian authorities, since the Marines do not plan to leave the Camp. And the Marines certainly will not be confused by the existence of the State's larger EPZ. Therefore, if the State insists on drawing its plume EPZ boundary for Camp Pendleton as it has, there is no reason why we should penalize the Applicants for it.

23. But there is a real potential for confusion, as well as in our view a misapplication of the rule, in the way the different EPZ lines were drawn near San Juan Capistrano and Dana Point. The confusion arises from the fact that the record indicates not one, but three, and possibly even four different plume EPZ boundaries in that area: (1) the 10-mile line; (2) the Applicants' "Extended" EPZ, shown in Figure 2a of App. Ex. #132; and (3) the EPZ in the Orange County Plan. The fourth possibility is the 10-mile line to Ortega Highway and San Juan Creek from the highway to the Ocean.⁵² To add to the possible confusion, the Applicants call (2) above

⁵² It is unclear whether the Applicants consider the plume EPZ boundary in this area to be the 10-mile line or San Juan Creek. On the one hand, they sometimes refer to the creek as the boundary. (Written testimony of Pilmer, 7370; Murri, 7260) On the other hand, the

(CONTINUED)

the "extended" EPZ, while the State calls a different and much larger zone the "extended" EPZ.⁵³

24. A careful study of the record can explain these different zone configurations and how they came to be. It is reasonably clear, and the Board so finds, that the plume EPZ as developed by the Applicants and adopted by most of the offsite jurisdictions is the 10-mile line, except for the small notch carved out to avoid Riverside County. The "extended" EPZ, as that phrase is used by the Applicants, includes the remainder of San Juan Capistrano and all of Dana Point. These two zones are identical for emergency planning purposes, except that the extended EPZ does not have siren coverage to the minimum audible level specified in the EPZ. (Tr. 9188)

25. This differentiation between the 10-mile plume EPZ and the "extended" plume EPZ did cause some confusion at the hearing, both for the Board and for certain witnesses.⁵⁴ That alone suggests at least the possibility of confusion in the future in the event of an emergency. More fundamentally, in the circumstances of this case we read the rule as requiring extension of all relevant aspects of emergency planning, including siren coverage, to all parts of the plume EPZ. Here the 10-mile line bisects one populated area, San Juan Capistrano, and falls just short of another populated area, Dana Point. These are small areas which could be included entirely within the plume EPZ by extending its boundary to about 12 miles, a distance comfortably within the "about 10 miles" criterion. Inclusion of these small areas would avoid possible confusion about potential evacuation zones and could facilitate an actual evacuation. There is no practical reason not to include these areas. The Applicants would be required to buy and install a few more sirens, but only a small fraction of the thirty-nine sirens they have already bought and installed. (See App. Ex. #61 showing siren coverage; written testimony of duBois, 7010) Appro-

maps supplied to the local jurisdictions (e.g., Figure 1 in the San Clemente Plan) use the 10-mile line as the boundary of the entire zone. Since the 10-mile line and the creek are close together, this may make little practical difference. In view of our disposition of the boundary question in this area, the question becomes moot.

⁵³ This possible confusion should be eliminated when the Applicants' "extended" EPZ is eliminated. The very existence of a separate State "extended" EPZ, with separate requirements, might suggest some potential for conflict or confusion. However, the Director of the State OES testified to the contrary. (Kearns, Tr. 10,186, 10,197) With some lingering doubts, we accept that view.

⁵⁴ For example, the Applicants' lead witness on emergency planning, Mr. Pilmer, apparently considered the 10-mile line to be the EPZ line. (Testimony, 7370; Tr. 9189) But Mr. Turner the chief emergency planning official of Orange County, considered the more extensive boundary line in the County plan to be controlling, and referred to the 10-mile line as "theoretical." (Tr. 8934. See Tr. 3503, 8724-30; 8933-39. See also Nauman, Tr. 10,601)

priate revisions of the offsite plans to reflect the revised plume EPZ boundary could be easily accomplished. We are including an appropriate condition in our authorization of operating licenses to accomplish this change.⁵⁵ Apart from that condition, we conclude that the boundaries of the plume EPZ for San Onofre were drawn in accordance with relevant local conditions and comply with 10 CFR 50.47(c)(2)

B. Offsite Public Protective Action Capability.

1. **General Factors Affecting Evacuation.** Contention 1 concerns whether the state of emergency preparedness at San Onofre provides reasonable assurance that the offsite transient and permanent population within the plume exposure pathway Emergency Planning Zone (EPZ) can be evacuated or otherwise adequately protected in the event of a radiological emergency with offsite consequences.

2. In their Findings Nos. 407-410, the Applicants have catalogued the constraints which might be present at the time of an emergency. These constraints are essentially generic constraints and are accounted for, to the extent possible, in the emergency plans for San Onofre. We adopt and repeat those findings in the following paragraphs.

3. "Environmental constraints will include meteorologic and geographic considerations. Protective action options may be restricted by severe weather conditions. Options are also restricted by numbers, types and directions of roadways and the rate of egress available given geographic and roadway constraints." (App. Ex. #106, p. 1.26; Murri, Tr. 7208)

4. "Protective action options are further constrained by the density and distribution of the population, the total size of the population involved, the age and health status of segments of the population, and other demographic considerations." (App. Ex. #106, p. 1.26; Murri, Tr. 7208)

5. "Temporal constraints will be present during all phases of protective action. Time available for action may be a real constraint for evacuation of close-in populations, particularly in the case of short-term (puff) releases. Even after a decision for action has been made, the time to notify the population and implement protective action may not be sufficient to prevent some exposure." (App. Ex. #106, p. 1.26; Murri, Tr. 7208; Grimes, Tr. 11021-22)

6. "Resources availability is also a constraint on viable options for protective action. The local planner must evaluate these constraints in any

⁵⁵ We note in conclusion the Staff's equivocal position on this point, saying on the one hand that the 10-mile EPZ was consistent with NRC regulations, and on the other hand that the matter should be "promptly addressed." (SF 337)

emergency situation. Ideally, it should be possible to balance these constraints in some analytical fashion which would place each constraint in its proper perspective on a common scale. Since many of the constraints cannot be quantified, local planners must use rational, subjective judgment in evaluating them." (App. Ex. #106, p. 1.28; Murri, Tr. 7208)

7. In the event of a nuclear emergency at San Onofre spontaneous evacuation, rather than directed evacuation, may occur. That is, the potentially affected population may perceive themselves as threatened and evacuate before evacuation is ordered. Spontaneous evacuation will decrease the population to be evacuated and there will be less traffic and potential congestion on the highways during the directed evacuation. (App. Ex. #106, pp. 1.37-1.38; Murri, Tr. 7204-05)

8. There is evidence indicating that evacuations can be accomplished when the need arises. People generally are alert and cautious and are committed to accomplishing evacuation successfully. Few evacuations have had the benefit of the extensive planning that exists for the EPZ around San Onofre and these nuclear reactors. (App. Ex. #105; Murri, Tr. 7206-07)

2. Taking Shelter.

9. If the lead time for evacuation is not sufficient, sheltering is the appropriate protective action. Moreover, sheltering may be the preferred protective action when other constraints obtaining at the time of the accident determine that sheltering is the more effective and feasible action. Subsequently to the passage of the plume, evacuation might again become a needed action to protect the public from deposits of radioactive materials on the affected area. (Grimes, Tr. 11,021; Murri, Tr. 7208)

10. Sheltering is the preferred action when projected doses are less than those prescribed in the Protective Action Guides for evacuation. Sheltering will reduce the dose to the public and is usually preferable to the costly and disruptive action of evacuation. (Murri, Tr. 7208-09)

11. The Applicants, in their Findings Nos. 417-421, present relevant considerations relating to the protection afforded by sheltering, personal actions and thyroid prophylaxis. The Board adopts those findings and repeats them in the following paragraphs.

12. "Considerable protection is afforded by sheltering. Even a normal wood structure provides some protection for an indefinite period from direct exposure to gamma rays and substantial protection from beta radiation emitted from the plume or radioactive material deposited on the ground. Such a structure with windows and doors closed and ventilation turned off can significantly reduce the inhalation dose for a limited period if the sheltering action is taken prior to the arrival of the plume. The

problem in totally preventing an inhalation dose for an indefinite period is the fact that there is a continual air change within a structure. The rate of air change depends on the 'air tightness' of the structure. Even so, there is a considerable reduction in the concentration of radioiodine and particulate radioactivity due to plate out and filtration as the airborne material from the plume seeps through small openings into the sheltering structure. The inhalation exposure can also be reduced if sheltering is required for extended periods of time by breathing through a towel or taking other respiratory protective action to further filter out the radioiodine and particulate radioactive material." (App. Exs. #106, pp. 1.38-1.41, #107, pp. 1-4; Murri, Tr. 7209, 7933; Sears, Tr. 10759; Grimes, Tr. 11004-05)

3. Administration of Potassium Iodide.

13. "The uptake of inhaled or ingested iodine by the thyroid gland may be reduced by the ingestion of stable iodine, most often potassium iodide ('KI'). The oral administration of about 130 milligrams of KI will introduce sufficient accumulation of stable iodine in the thyroid to prevent significant thyroid uptake of radioiodine which is then eliminated in the urine. In other words, when the thyroid is saturated in the stable iodine, the uptake of radioiodine is 'blocked' and will be excreted in the urine, resulting in significant thyroid dose saving. The principal constraints in the use of KI are the logistics of properly administering the drug within the time it will be most effective." (Linnemann, Tr. 7089)

14. "The effectiveness of KI as a blocking agent is directly related to the time at which it is administered. If KI is administered prior to exposure, it can be 100% effective. After exposure has occurred, the earlier it is administered the more effective it will be in preventing the uptake and reducing the radiation exposure. For example, if a 130 mg. tablet of KI is given within the first two hours after exposure, it will block 90% of the uptake of radioactive iodine. If it is administered 4 to 6 hours after exposure, it will block the uptake by 40% to 50%. If administered later than 12 hours after exposure, KI will have little effect." (Linnemann, Tr. 7080, 7782)

15. "A legal constraint to the use of KI is the fact that it is a prescription drug in California and must be distributed in accordance with state health laws, even though the risk from a small dose for an emergency condition is very small. Accordingly, distribution of KI during an emergency must be conducted upon order of the State or County Health Officer in such a manner that the potential for allergic reaction to this drug can be properly supervised." (App. Exs. #106, pp. 1.41-1.42; #52, Section IV.A.2.a.(1); and #53, Section III.C.4; Reed, Tr. 10231; Murri, Tr. 7209-10; Linnemann, Tr. 7089-90; Ehling, Tr. 9938)

16. "The use of stable iodine as a protective action for emergency workers is generally recommended, but only in accordance with State health laws and under the direction of medical officers as indicated above. However, KI or other thyroid blocking agents are not generally recommended as a protective action for members of the general population. (See NUREG-0654, II.J.10.e) The reason is that the dynamics of a plume release in which the radioactive material is moving and diluting suggest it would be extremely unlikely to obtain a high enough concentration of radioiodine to deliver a critical dose to the thyroid gland of a member of the general population prior to evacuation or sheltering. Moreover, use of KI or other blocking agents are not really useful on a mass basis in an emergency, because of the logistics of distribution and administration in a timely manner. On the other hand, administration of KI should be considered for emergency workers, who may be working in the exposure area for extended periods, or who may be working in a closed area where the concentration of radioiodine could deliver a significant thyroid dose. As a general rule, KI should be administered if the expected or likely dose is 10 rem or greater to the thyroid gland, especially where other means of respiratory protection are not available or are not practicable." (App. Ex. #106, p. 1.42; Linnemann, Tr. 7090-91; Murri, Tr. 7210; Ehling, Tr. 9936-38)

17. Having set forth the protective actions that might be taken in the event of a radiological release from San Onofre with offsite consequences and having identified some of the benefits of and constraints on those actions, we will now examine whether the state of emergency preparedness at San Onofre provides for implementation of those protective actions.

4. Evacuation Time Estimates at San Onofre.

18. Evacuation time estimates are needed in an emergency to provide to decisionmakers knowledge of the time required to allow evacuation under various conditions. (Staff Ex. #12, p. 13-3; Brothers, Tr. 7303-04; Sears, written testimony (August 20, 1981), p. 3, Tr. 10,644; Grimes, Tr. 11,003-04)

19. Evacuation time estimates were prepared for the Applicants by Wilbur Smith and Associates. Both an original and Revision 2 to that study were put in the record as Applicants' Exhibits #51 and #132. Mr. B.T. Brothers of Wilbur Smith and Associates presented testimony on the time estimates and evacuation planning. (Brothers, Tr. 7276-316, 11,069-89 and App. Exs. #51 and #132)

20. In their Findings Nos. 448-451, the Applicants have described some of the details of the estimation of evacuation times. The Board finds the facts presented there to be correct and we adopt those findings for

their explanatory value. These findings are repeated in the following paragraphs.

21. "The evacuation time estimates were calculated for various evacuation conditions using a computer-based evacuation time assessment program previously developed by WSA for FEMA's use in assessing evacuation time estimates for nine other nuclear plants. The evacuation time estimates computer program is not a new program, but is a refinement of a basic program that has been used for many years by WSA and other firms. The program and input data have been adjusted to reflect site-specific conditions in the Plume and Extended EPZs. The program, as utilized for SONGS, has been reviewed and approved by the Texas Transportation Institute. The methodology used in the program is in conformance with the criteria in NUREG-0654, Appendix 4." (App. Ex. #132, Chapter 2; Brothers, Tr. 7305-06, 11,068; Sears, written testimony, August 20, 1981, p. 5, Tr. 10,644)

22. "Substantial evidence was received on the methodology used to arrive at the evacuation time estimates for areas within the Plume and Extended EPZs under various conditions. Basically, the time required to evacuate is comprised of several individual time components which correspond to a sequence of public response actions during an evacuation. These time components are the receipt of notification, return home, departure from home, enroute evacuation travel, and delay. Because each individual would react differently in terms of speed, each of the public response time components (notification, return home, and departure) is considered as distribution of response times rather than a single, fixed time increment. Public response times were determined for the general automobile using resident and transient population for daytime and nighttime conditions. Separate consideration was given to the time it takes to mobilize public transportation and ambulance services for the maximum number of persons estimated to need such services." (App. Ex. #132, pp. 36-37 and Tables 5 and 6; Brothers, Tr. 7306-09)

23. "The computer simulation model was used to evaluate each fifteen minute increment of the evacuation period. The computer model continues to measure evacuation time and related parameters from initial notification of the public until the emergency planning sector(s) is evacuated. The computer analyses considers the capacity constraints present in both the primary and secondary evacuation routes relative to the rate at which traffic accesses and traverses these roadways. Both travel times and delay times are estimated, and included with the response time, to provide a total time of evacuation." (App. Ex. #132, Appendix B; Brothers, Tr. 7305-07)

24. "The evacuation time estimates take into consideration the potential effects on traffic caused by adverse weather, or roadway disablements

at the most critical junctures in the roadway system." (App. Ex. #132, pp. 56-57 and Chapter 9; Brothers, Tr. 7309-11; Sears, written testimony, August 20, 1981, p. 6, Tr. 10,644)

25. The actual time estimates indicate that the plume EPZ can be evacuated in about 2½ hours under optimal conditions. Under peak permanent and transient population conditions, evacuation would require about 6¼ hours under favorable weather conditions, and about 7¼ hours under adverse weather conditions. Under these emergency conditions, the time required to evacuate would be compared with the predicted time and nature of the release and the expected meteorological conditions at the time of the release. The comparison will be used in an evaluation of the exposure risks of sheltering versus evacuation to reach a decision on the appropriate protective action. (App. Ex. #132, Chapter 8; Brothers, Tr. 7303-04; Sears, Tr. 10,644; Grimes, Tr. 11,004)

26. Sheldon C. Plotkin, President of Sheldon C. Plotkin and Associates, a Los Angeles engineering consulting firm, appeared as a witness for the Intervenors. Among other matters, he testified that there were defects in the time estimate studies of Wilbur Smith and Associates. (Plotkin, testimony, pp. 3-4) The Staff raised objections and the Board ruled that substantial portions of the testimony of Dr. Plotkin dealing with health effects were inadmissible because they were beyond the scope of Contention 1. (Tr. 9433-47)

27. Dr. Plotkin challenged certain assumptions used in the Wilbur Smith and Associates' study and claimed that overly optimistic evacuation conditions had been used. He indicated that spontaneous evacuation had not been considered, and that travel time did not include on-ramp queuing. He also claimed that if correct consideration of traffic accidents were included, evacuation times would be lengthened. (Plotkin, testimony, pp. 7-8; Int. Ext. #7; Plotkin, Tr. 9453-60).

28. In reviewing the record of Dr. Plotkin's testimony and that of other witnesses for the Intervenors, we have identified the following challenges to the Wilbur Smith and Associates' time estimates study:

- overly optimistic evacuation conditions are used;
- the transient population within the plume EPZ is underestimated;
- highway capacity factors are overestimated;
- the length of time that Interstate 5 would be fully loaded is underestimated;
- the mobilization time for public transportation is underestimated;
- road blockage due to accidents is underestimated;
- the time for nighttime evacuation is underestimated;
- the impact of spontaneous evacuation beyond the EPZ is not considered; and

— travel time based on queuing at on-ramps and on poor secondary roads is not considered.

(Plotkin, testimony, pp. 3-4, 7-8, Tr. 10,313, 9451-567; Goodwin, Tr. 9885; Mecham, Tr. 10,022; Bloom, Tr. 10,290; Carvalho, Tr. 10,791-92)

29. Mr. Brothers was recalled as a rebuttal witness concerning the allegations of inadequacy of the Wilbur Smith and Associates' time estimates study. In both his original and rebuttal testimony, conservatisms in the study were identified, including the following:

— The evacuation time estimates represent the peak transient and permanent population condition which could be expected under each evacuation scenario;

— the population assumptions reflect no prior, voluntary evacuation of residents or transients prior to the public notification to evacuate;

— similarly, the public response/mobilization time distribution used in the evacuation time estimates assumes that the population is going about normal daily routines at the time of public notification to evacuate, and that no efforts have been taken to assemble and prepare the household unit for evacuation;

— the time estimates assume that all households and transients within the evacuation area would evacuate beyond the EPZ. This is a conservative assumption because some people refuse to evacuate even when presented with a grave threat; and

— evacuation routes are assumed in general to be operated in their normal direction without any use of one-way operation on roadway shoulder areas and parking strips on arterial streets, or the use of freeway shoulder areas to reduce delay times at traffic "bottlenecks."

(App. Ex. #132, Chapter 3; Brothers, Tr. 7315-16, 11,069-70; see AF 452)

30. In reviewing the record before us and finding that the conservatisms identified above were incorporated in the WSA studies, we have concluded that the Intervenors' criticisms have no basis in fact. The Applicants' consultant, WSA, and their witness, Mr. Brothers, provided extensive and highly professional testimony. The computer program used by WSA is an accepted program for time estimate studies and the conditions used are conservative. The input to the study includes conservative estimates of transient populations and uses generally accepted highway capacity figures. The computer program treats the loading of Interstate 5 in a manner that lengthens the final time estimates. That is, the highway is considered to be fully loaded during only one half of the evacuation time. Mobilization times were derived from empirical data from appropriate sources as was road blockage due to accidents. The conditions described for nighttime evacuation seemed reasonable to the Board, and the impact of spontaneous evacuation, either within or outside the EPZ, is

likely to lessen actual evacuation time, rather than extend it. The time estimates do consider queuing and delay times at on-ramps and slow secondary streets. Moreover, individuals responsible for the use of the time estimates during an emergency, which include persons from the local jurisdictions, the California Highway Patrol and the California Department of Transportation, have reviewed the time estimates and found them to be reasonable. Because of the foregoing, we conclude that the time estimates of the WSA study are valid and conservative. (App. Exs. #51 and #132; Brothers, Tr. 7318-20, 11,068-100; Sears, written testimony, p. 6, Tr. 10,644; Nauman, written testimony, p. 3, Tr. 10,420; Killingsworth, Tr. 8276; Roper, Tr. 8398; Coleman, Tr. 8581-82; Ferguson, Tr. 8696; Wallace, Tr. 9326-27; Turner, Tr. 8906; Swanson, Tr. 8831)

31. The Staff considered the WSA time estimates provided by the Applicants and found them acceptable. (App. Exs. #51 and #132) They also found that the time estimates for evacuation met the criteria of NUREG-0654, II.J., and Appendix 4. The Staff's contractor, Texas Transportation Institute of Texas A&M University, reviewed both of WSA's time estimate studies and found the most recent revision excellent in all respects. (Sears, testimony, pp. 4-5; Sears, Tr. 11,027)

5. Evacuation Planning at San Onofre.

32. The principal considerations in planning for evacuation include the following factors:

- Determination of the number of people who may have to be evacuated;
- identification of the modes and quantity of transportation available;
- identification of special facilities such as hospitals, nursing homes and schools;
- identification of usable roads and potential impediments to their use;
- identification of reception and care facilities in host areas for use by evacuees, if necessary;
- identification of medical resources inside and outside the Plume EPZ;
- dissemination of prompt public notification and information;
- provision of security for the evacuated areas; and
- determination of the time involved for the conduct of an evacuation given various circumstances.

(Murri, Tr. 7203-04; NUREG-0654, II J-10).

33. The Applicants and the principal offsite emergency response organizations have adopted and implemented evacuation plans which con-

sider the above factors. (App. Exs. #51-55 and 58; Brothers, Tr. 7276-77; Stowe, Tr. 8489-90; Coleman, Tr. 8573-74; Turner, Tr. 8902; Hunt, Tr. 9262-63; Wallace, Tr. 9321).

34. The offsite organizations which will support the principal offsite emergency response organizations have also developed plans for evacuation which are consistent with those of the Applicants and the principal organizations. (App. Exs. #56, #139, #140; Killingsworth, Tr. 8267-68; Roper, Tr. 9332-33; Nash, Tr. 8422-23; Ferguson, Tr. 8692-93; Swanson, Tr. 8799-802).

35. In their Findings Nos. 426-444, the Applicants have described much of the detail of the development of the emergency response plans. In large part, these findings concern descriptive and uncontested matters. We here adopt those findings and repeat them in the following paragraphs.

36. "The various evacuation plans and procedures adopted and implemented by SCE, the principal and supporting offsite emergency response organizations were initially coordinated using an overall evacuation routing and management plan for the Extended EPZ⁵⁶ developed by Wilbur Smith & Associates ('WSA'). This plan was subsequently segmented and the applicable portions incorporated in each offsite emergency response plan. Throughout the planning process and preparation of the various evacuation plans, Applicants made special efforts to assure that the evacuation components of each jurisdiction's emergency response plan remained both compatible and coordinated with the plans for the other jurisdictions. This coordination effort also included providing to each involved jurisdiction a special binder that contains the evacuation plans for all the other jurisdictions; and developing the "Interagency Agreement and Evacuation Procedure for the San Onofre Plume Exposure Pathway Emergency Planning Zone" ("IAEP" to serve as a joint standard operating procedure for each involved offsite emergency response organization. The IAEP, which is incorporated by reference in each of the principal offsite emergency response organization plans, ensures the necessary consistency of public information announcements, evacuation routes, use of reception and care centers, establishment of traffic control points to limit access to and to direct traffic out of the evacuation area, possible medical aid assistance, and general information." (App. Ex. #59; Murri, Tr. 7221; Brothers, Tr. 7278-80).

37. "To assure on-going coordination in the offsite plan review and implementation process, including evacuation planning, an Interjurisdic-

⁵⁶ The "extended" EPZ terminology will be eliminated under a condition we are imposing on the operating licenses. See ¶¶ A25, above. This change would not affect the area actually covered by the plume EPZ.

tional Planning Committee ("IPC") has been formed. The IPC is comprised of representatives from the SCE, USMC, the Cities, the Counties, and State Parks. The IPC is currently revising the IAEP to reflect changes and improvements as suggested by the FEMA/RAC comments and the experience gained in the May 13 exercise." (App. Ex. #150; Pilmer, Tr. 7394; Coleman, Tr. 8600-01; Ferguson, Tr. 8689-90; Hunt, Tr. 9304-05; Wallace, Tr. 9334; Fox, Tr. 9030).

38. "To assist in the development of the offsite evacuation plans, WSA held numerous discussions with local officials to identify resources and review existing plans to ensure that the evacuation plans would conform to the individual jurisdiction's normal approach and procedures for handling emergency situations. Principal elements that were discussed, considered and incorporated into the evacuation plans were:

(a) Responsibility and general location for diversion of non-local traffic around the Extended EPZ, and the establishment of measures to control entry into the Extended EPZ;

(b) identification of the numbers and distribution of resident and transient population which may be within the Extended EPZ at the time of initial notification of an incident at SONGS;

(c) assignment of an evacuation route for the population within each area;

(d) identification of the locations at which traffic control measures are desirable in order to facilitate evacuation traffic flow;

(e) identification of those institutions and population elements which may require transportation assistance, and the resources available for this purpose;

(f) identification of reception and care centers outside the Extended EPZ, and the assignment of Extended EPZ populations to each; and

(g) identification of potential locations at which disruption of the primary evacuation routes could possibly occur, and determination of the effects of these upon an evacuation." (App. Ex. #115; Brothers, Tr. 7282-83)

39. "WSA met with representatives of local law enforcement agencies, the California Highway Patrol ('CHP') and the California Department of Transportation ('CALTRANS') to obtain recommendations and concurrence on responsibilities for emergency traffic diversion and EPZ perimeter security. It was agreed that the CHP is responsible for the initial diversion of traffic at the selected locations on Interstate 5 ('I-5'), the principal highway through the EPZ. CALTRANS will mobilize crews with traffic control equipment to replace the initial manual CHP diversion efforts." (App. Ex. #59, Section IV.D; Brothers, Tr. 7284-85; Killingsworth, Tr. 8267-69; Roper, Tr. 8330-31, 8334-35)

40. "The Orange County Sheriff Department is responsible for initial diversion of traffic on Pacific Coast Highway ('PCH') north of the EPZ and would assist CHP with traffic diversion in the EPZ within Orange County. The San Diego County Sheriff Department and the City of Oceanside Police will provide immediate response in assisting the diversion of traffic on northbound I-5 south of the EPZ. The Orange County and San Diego County Sheriff Departments will provide security at the perimeter of the area to be evacuated and will obtain the assistance of the National Guard if necessary." (App. Ex. #59, Section IV.B.2; Brothers, Tr. 7285; Turner, Tr. 8959; Hunt, Tr. 9300-01)

41. "In order to expedite selective or incremental evacuation of portions of the Extended EPZ, if conditions should so warrant, the Extended EPZ has been divided into evacuation planning subsectors. Subsector boundaries were delineated using readily identifiable boundaries to facilitate the communication of evacuation or other protective action instructions to the public prior to and during an emergency. Specific evacuation routes and reception and care centers procedures were designated for the transient, residential and institutional populations within each evacuation planning subsector. The evacuation routings for each individual subsector include: the recommended primary evacuation route out of the area; the most efficient routing on surface streets to each the primary evacuation route; and directions to predesignated reception and care centers located outside the EPZ." (App. Ex. #132; Brothers, Tr. 7279-80, 7290)

42. "At the Applicants' request, WSA has identified or conservatively estimated the numbers and distribution of the permanent and transient population which may be within the Extended EPZ at the time of initial notification of an incident at SONGS. (See NUREG-0654, II.J.10.b.) Demographic data for the Extended EPZ was derived from U.S. Census Bureau data, and confirmed by Orange County Environmental Management Agency and Administration Office Forecasting and Analysis information, as well as by population figures obtained from local planning agencies in the Cities. Demographic data for the following special populations within the Extended EPZ were quantified through interviews with the following agencies:

- Camp Pendleton populations - USMC, Camp Pendleton;
- Beach visitation - State Department of Parks and Recreation; San Clemente Marine Safety Division;
- School enrollment - Capistrano Unified School District; Individual private schools; and
- Transient Workers and Tourists - State Employment Development Department; San Clemente Planning Department; San Clemente Fire Department; San Juan Capistrano Planning Department; and Local Cham-

ber of Commerce Office. A table and a map showing population distribution in a sector-by-sector format has been devised based on this data and made available to the involved State and local jurisdictions." (App. Ex. #132, p. 4, Appendix A; Brothers, Tr. 7285-86)

43. "The Plume and Extended EPZs have two major transportation facilities, Interstate 5 and the Pacific Coast Highway, which are identified as the primary evacuation routes. Basilone Road, although not considered to be a high capacity facility, is designated along with Interstate 5 as the evacuation routes for Camp Pendleton. There are also several secondary routes which parallel or provide alternatives to the primary routes, and which could be used by evacuation traffic in the event of partial impairment or complete blockage of one or more of the primary evacuation routes. These secondary routes include, but are not limited to, Ortega Highway, Camino Capistrano, Rancho Viejo Road, Margarita Parkway, Old Highway Route 101, and Crown Valley Parkway." (App. Ex. #132, p. 3-5; Brothers, Tr. 7288-89)

44. "In order to provide for a more orderly evacuation, preselected traffic control locations have been identified. The traffic control locations were identified and prioritized based on recommendations by representatives of the San Clemente Police Department, Oceanside Police Department, County Sheriff Departments, CHP, and CALTRANS. The high priority traffic control locations are those identified by the local officials and in the WSA studies as having the highest potential for constraining evacuation traffic flow." (App. Ex. #59, Section VI.C; Brothers, Tr. 7290-92)

45. "The private automobile would be the principal means of evacuation. About 93 percent of the population within the Extended EPZ are people who live in households that have access to one or more automobiles. Nevertheless, the evacuation plans identify and take into consideration the several elements of the permanent and transient population which will require transportation assistance." (App. Ex. #132, p. 22; Brothers, Tr. 7293)

46. "Through Applicants' public information program, persons without transportation will have information regarding telephone numbers to call for transportation. In order to minimize the need for telephone use during the emergency for the purpose of requesting transportation assistance, two steps have been taken. First, about thirty transportation assembly points have been established throughout the Plume and Extended EPZs for persons to walk to and obtain transportation. Information regarding the location of these points has been and will continue to be made available to the transient and permanent population within the Plume and Extended EPZs through Applicants' Public Education and Information Program.

Second, Applicants' in cooperation with the Cities and Orange County have provided a post card to the residents of the Plume and Extended EPZs which may be returned in advance of an emergency notifying the responsible official of the person's need for transportation assistance. Responsible officials in the San Clemente and Orange County are currently in the process of collecting this information and attempting to make certain that those needing such assistance have been identified. Various representatives or organizations involved with caring for the elderly and the handicapped are also becoming involved in this effort." (App. Ex. #66; Brothers, Tr. 7292-93; Cramer, Tr. 7042-43, 7049, 7462-63; Turner, Tr. 8908-09; Ferguson, Tr. 8695; Coleman, Tr. 8578; Ditty, Tr. 9862; Logue, Tr. 10,093)

47. "In Orange County, arrangements have been made through the Orange County Transit District ('OCTD') and the Capistrano Unified School District ('District') to provide bus transportation for people without automobiles including those in special institutions such as schools, hospitals, nursing/retirement homes with restricted mobility due to age or a disability. A sufficient number of buses and ambulances are available and committed to the evacuation, based upon the most conservative estimates of persons who might require such transportation assistance. In San Diego County, whatever minimal requirement, if any, for transportation assistance would be provided through the San Diego Office of Disaster Preparedness, while the USMC will provide for its transportation needs, as well as assist others, if necessary." (App. Exs. #53, Section V.C.2.b.(6), #54, Section XIII.B.6, #59, Section VIII; Brothers, Tr. 7295; Swanson, Tr. 8803-04; Turner, Tr. 8907; Wallace, Tr. 9326)

48. "The majority of transients are expected to have personal transportation. Information regarding the securing of public transportation for those transients who do not have access to an automobile will be provided by Applicants at all appropriate locations throughout the EPZ." (App. Ex. #132, pp. 25-26; Brothers, Tr. 7293; Cramer, Tr. 7049-50)

49. "Public transportation assembly points have been established throughout the Plume and Extended EPZs. Most of these assembly points are located in the heavily-populated sections of Orange County. OCTD, the primary agency providing transportation assistance, has developed specific procedures for coordinating the assignment of OCTD resources to these points in the event of an emergency. Reassignment or further instruction to OCTD buses is possible using the mobile communication system between the OCTD dispatcher and the OCTD buses." (App. Ex. #54, Attachment 2; Brothers, Tr. 7296; Goodwin, Tr. 9914)

50. "The District has prepared emergency evacuation procedures which specify deployment of District and OCTD transportation resources

for this purpose, as well as making District transportation resources available during non-school hours." (App. Exs. #139, #140; Brothers, Tr. 7296; Swanson, Tr. 8799-801)

51. "The deployment of ambulance resources is the responsibility of the Emergency Medical Services Division of the Orange County Human Services Agency. In the event of a declared emergency, the Orange County Office of Emergency Services has the authority to take control of private ambulance resources and utilize them as needed. In San Diego County, the coordination of ambulance resources is through the Emergency Medical Services, San Diego County Department of Health Services." (App. Exs. #53, Section V.C.2.b., #54, Section V.F.; Brothers, Tr. 7296-97; Ehling, Tr. 9987)

52. "Reception and care centers have been identified for evacuees who may not have made prior arrangements to stay with friends or relatives. Six primary reception and care centers have been selected in Orange County and three in San Diego County. Several backup facilities have been designated for each primary reception and care center. The American Red Cross will activate the centers in the event of an evacuation." (App. Exs. #54, V.C.2.b., #54, XVIII.C; Brothers, Tr. 7297; Nash, Tr. 8423)

53. "CALTRANS has procedures in place whereby response teams would be dispatched to assess the nature and extent of any actual or suspected damage or other traffic impairments along I-5. The CALTRANS survey teams would develop appropriate traffic diversion recommendations, relay the recommendations to the appropriate agencies, and initiate mitigative actions to clear the roadway of the impediment and/or repair damage to roadway structures." (App. Exs. #51, Section 6.2.7 and Appendix A (Letter from CALTRANS), #132, pp. 68-71; Brothers, Tr. 7298-99; Roper, Tr. 8332-35)

54. "The various kinds of emergency public assistance that could be needed to protect the public health and safety following an evacuation notification have been provided for in the evacuation planning. Medical assistance shall be coordinated by the Emergency Medical Services Division of Orange County and by San Diego County. Fire protection shall be provided for by San Clemente and San Juan Capistrano Fire Departments and the San Diego County Volunteer Fire Fighters. Transportation assistance during an evacuation shall be coordinated by the Orange County General Service Agency Transportation Division and the San Diego County Office of Disaster Preparedness. Law enforcement shall be provided by Orange County and San Diego County Sheriff's Department in conjunction with local police departments, CHP and the National Guard, if requested." (App. Exs. #53, Section IV.A, #54, Section IV.A, #59,

Section IV.B; Brothers, Tr. 7299-300; Hunt, Tr. 9300-01; Turner, Tr. 8959; Killingsworth, Tr. 8312)

55. In their proposed findings the Intervenors are critical of the "Emergency Plans for Special Groups." (I.F.F. Nos. 3-21). The Board has identified in the foregoing findings substantial evidence of the existence of plans and capabilities to take the full range of protective actions for the elderly, the handicapped and other groups needing special assistance in transportation. The standard we have sought is a "reasonable assurance" that the plans can be implemented at the time of full power operation. (10 CFR § 50.47(a)(1)) This assurance is provided for persons needing special assistance by the continuing public education designed to identify and provide for all persons and institutions requiring assistance; by the availability of an adequate number of buses, special vehicles and ambulances; and by the existence of medical facilities at the relocation centers operated by the Red Cross. The Board notes in this connection that each of the Intervenors' witnesses who was involved with assisting handicapped and elderly persons expressed a willingness to help the Applicants and local officials in the identification of those needing special evacuation assistance. (Ditty, Tr. 9860-62; Logue, Tr. 10093; Fleming, Tr. 10124)

6. Planning for Sheltering and Thyroid Prophylaxis.

56. If the recommended action in an emergency is sheltering, shelter can be obtained in homes, places of lodging, places of employment or in designated public shelters. A series of public sheltering locations is being identified throughout the EPZ. The emergency plans of the emergency response organizations identify the circumstances under which sheltering will be the appropriate action. (App. Ex. #53, Section V.C.1.a, #54, Section XII, #55, Section III, E.1; Brothers, Tr. 7300-02; Murri, Tr. 7208-09)

57. The emergency plans of the Counties include plans for thyroid prophylaxis for institutionalized individuals and emergency workers as suggested by NUREG-0654, II.J.10.e. Sufficient potassium iodide has been stockpiled by the Applicants and Orange County. (App. Ex. #51 and #112; Murri, Tr. 7210; Ehling, Tr. 9936-37)

58. The Intervenors did not present evidence concerning sheltering and thyroid prophylaxis. The Board concludes that planning for sheltering and thyroid prophylaxis is acceptable and provides assurance that these protective measures will be available and adequate if they are needed. We reject Intervenors Proposed Findings Nos. 4 and 5 concerning radio-protective drugs and find substantial evidence in the record that such drugs can be administered to those persons requiring them. (See AF 457-458; SF 73; FF 22-25)

7. Geographical Constraints and Population Growth.

59. In their Proposed Findings Nos. 44-52, under the heading "Unique Geographical Constraints," the Intervenor's express concern about future population growth and such constraints to evacuation as the hilly-canyon terrain, the lack of a traffic circulation plan for the area, absence of frontage roads, gated communities with one way ingress and egress, and many narrow, not-through streets. They also cite witness Mecham's testimony (Tr. 10,032; IPF 46) that existing Orange County plans project that no additional north-south roads will be available for use in a possible evacuation prior to approximately 1995.

60. We have, in our findings above, considered the studies and testimony relating to evacuation time estimates (FF 18-31). This evidence has taken account of the demography, specific geography and roadways available in the EPZ, and we note again that we have found the time estimates acceptable. (See our FF 30-31)

61. In his rebuttal testimony, Mr. Brothers testified that the Wilbur Smith and Associates evacuation planning had taken account of the lack of a general circulation plan, the numbers of people to be evacuated in each of the area segments, and the specific configuration and nature of the streets in each area. He also testified that these site-specific characteristics of the roadways caused a relatively long time to access the arterial streets, but that this does not affect the overall evacuation time estimates significantly. The factor which has the greatest significance in determining evacuation time is the traffic carrying capacity of the main evacuation routes, the Pacific Coast Highway and Interstate 5. (Brothers, testimony, pp. 22-27; Tr. 10,090-91)

62. As to future population growth and its possible effects on evacuation, we heard certain informal estimates of future population increases from witnesses Carvalho and Mecham. (Carvalho, Tr. 10,784, 10,788-89; Mecham, Tr. 10,030-31; also see IF 44) But no party made any serious attempt to prove population growth for periods beyond that used in the Wilbur Smith Study.

63. Although population increase determinations may be relevant for other purposes, we do not read the new regulation to require such determinations. Moreover, the regulation does not set any specific time period within which evacuation must be accomplished. The purpose of time estimates is to provide decision makers an acceptable basis for determining whether evacuation can be completed successfully in advance of potential radiation exposure under whatever circumstances may be then in effect. The Intervenor's concerns for the future viability of evacuation as a protective measure are not, however, matters that will be overlooked. Annual review of emergency plans are required by the regulations and new

time estimates and plans will be made as needed. (See 10 CFR § 50.47(b)(14), Appendix E, Section IV.G, and 10 CFR § 50.54(t))

8. Board Conclusions.

64. We have considered the massive record on Contention 1 and find that the state of emergency preparedness provides reasonable assurance that the offsite transient and permanent population within the plume exposure pathway Emergency Planning Zone for San Onofre can be evacuated or otherwise adequately protected in the event of a radiological emergency with offsite consequences as required by 10 CFR §§ 50.47(a)(1), (b)(10), and Part 50, Appendix E.IV.

C. Arrangements for Medical Services.

1. Contention 2D places in controversy whether the emergency plans affecting the "offsite transient and permanent populations" are adequate with respect to "arrangements for medical services for contaminated and injured individuals." The Applicants and the Staff read this contention very narrowly to mean only arrangements for persons injured at the site — *i.e.*, plant employees or possibly emergency workers, such as firemen assisting in a plant accident. Both the Applicants and the Staff took the position that under the emergency planning regulations no specific arrangements for medical services are required with respect to members of the general public in the plume EPZ.⁵⁷ Consistent with that position, the offsite plans contain little in the way of arrangements for medical services.⁵⁸ For

⁵⁷ The phrase "offsite transient and permanent populations" in this context normally connotes the public in the plume EPZ. It is somewhat ironic that the Applicants and the Staff would first stipulate with the Intervenors to this contention language and later interpret the regulation (from which the contention was drawn) to exclude the public completely from medical services planning.

⁵⁸ There is nothing about medical services in the Interagency Agreement or the Plans for San Juan Capistrano and the State Parks and Beaches. The San Diego County Plan (p. V-6) contains only sketchy references to medical services, and the Orange County Plan only discusses decontamination (pp. V 38-40). There are two State plans in evidence, the Applicants' Exhibit 52, and the Intervenors' Exhibit 23. The latter plan is more recent and would be followed by the State now if an emergency were to occur. (Kearns, Tr. 10,135) Under that plan, local government would be responsible for coordinating provision of medical services, including transportation and care. However, the State Department of Health Services, Disaster Medical Services Section, has a broad supporting role including training, procurement of equipment, and identifying facilities capable of treating the injured.

The record does not disclose whether the State is presently prepared to implement these responsibilities. We have only the statement of the Applicants' witness, Dr. Linnemann, that the State's failure to develop thus far a list of hospitals in the State and neighboring States capable of treating radiation victims would not present problems in providing necessary medical services for radiation victims. (Tr. 7110) But we must assess this statement in the light of Dr. Linnemann's view that significant offsite radiation injuries are not foreseeable, a view that we reject. (Tr. 7087. See pp. 1196-1197, above)

example, the San Clemente Plan contains just two sentences on the subject, as follows:

The Emergency Medical Services Coordinator shall be responsible to identify staff and supervise emergency first aid and triage stations as needed. The resources of the local medical community shall be incorporated when appropriate. Plan, p. VII-8.

The following findings focus on the Applicants' arrangements for employees and emergency workers injured onsite. Those arrangements are adequate for that purpose. These findings are brief and general because they are uncontested. The legal question whether medical service arrangements for the offsite public are required is discussed at pp. 1186-1200, above.

2. The Applicants' arrangements for medical services are directed exclusively toward persons injured at the facility. Initial treatment and decontamination can be provided at the facility. (App. Ex. #51, Sec. 6.5; Hauck, Tr. 7121-22)

3. The Applicants have contracted with three area hospitals and three area doctors to provide treatment facilities and care for patients suffering from injuries complicated by radiation contamination or excessive radiation. (App. Ex. #51, Appendix A; Hauck, Tr. 7118-19, 7123-24)

4. Time is not of the essence in decontamination or treatment of excessive radiation. Treatment of a traumatic injury always takes precedence. Persons can be decontaminated at home or at any facilities where showers are available. (Linnemann, Tr. 7084, 7087, Hauck, Tr. 7121-22, 7798)

5. In excessive exposure cases, there is an uninterrupted clinical course which evolves over days and weeks. The gradual evolution of the injury allows for time in which to bring the results of tests and expertise to bear. (Linnemann, Tr. 7102-03, 10,843-44)

6. The Applicants have contracted with an organization called "Radiation Management Corporation" (RMC) to obtain its "Emergency Medical Assistance Program." RMC is staffed by well qualified people and can offer specialized services for the treatment of radiation injuries. It offers such services to a number of nuclear utilities in all parts of the country. (App. Ex. #82-84; Linnemann, Tr. 7102-04)

7. The Emergency Medical Assistance Program provides training, inspection of equipment and supplies and drills of the medical support at the facility and the contract hospitals. The program also makes available the services of RMC experts for treatment including, if necessary, teams of health specialists. (Linnemann, Tr. 7104)

8. RMC backup support includes laboratories in Philadelphia and Chicago which can perform all types of analyses of bioassay samples from

radiation patients. Backup support also includes consultants in radiation medicine and related fields. (Linnemann, Tr. 7104-05)

9. If it is determined that a victim of radiation needs long-term definitive care, he can be transferred to a California hospital equipped to perform the clinical treatment of radiation injuries or to RMC's special facilities in Philadelphia or Chicago. (Linnemann, Tr. 7106)

10. The Staff's principal witness in this area was Mr. Brian Grimes, the Commission's Director of Emergency Planning and Preparedness. As to the number of accident victims to be anticipated, he testified that no particular number had been specified, but that the Staff envisioned "anything in the range from a half dozen to 25 or more." (Tr. 11,061) We find that the Applicants' present medical arrangements probably could accommodate upwards of 25 accident victims, including hospitalization, if necessary. (See ¶ 3, above) It is possible, although somewhat speculative, that such arrangements might be stretched to accommodate as many as 100 victims.

11. The Applicants' medical arrangements are based on the assumption that a very serious accident resulting in injuries to the public that require medical treatment and hospitalization is of such a low probability that no specific advance arrangements need to be made. (Tr. 9639-43) Their principal witness, Dr. Linnemann, testified in substance that offsite members of the general public are unlikely to receive a radiation dose large enough to produce symptoms of radiation sickness (75 rems), much less a hospitalization dose (150 rems). Although well qualified as a medical expert, Dr. Linnemann is not qualified as an expert in nuclear reactor accident probabilities. (Tr. 7077-79; Linnemann, Tr. 7086)

12. Contrary to the Applicants' proposed finding, the Board is not convinced that "arrangements for the treatment of the general public could be made on an *ad hoc* basis using the basic structure and training in place for the treatment of onsite personnel and emergency workers." (AF 293) The existing arrangements would be helpful in extrapolating to meet a possibly much larger need, but they would not be a wholly adequate basis for that purpose. This is suggested, for one thing, by numbers alone. A plan designed to accommodate 25 or fewer accident victims cannot be quickly expanded to accommodate, say, 1000 victims — forty times the size of the original planning group. The circumstances of the victims also are quite different. The objects of the present plans, facility employees and emergency workers, are located together at the site and are knowledgeable about radiation. They would certainly cooperate and stay near the site for decontamination and testing. It will be more difficult to track down members of the public who may have been seriously contaminated or exposed without their knowledge.

13. There are no emergency plans in place for medical services for the public in the event of an accident involving a large release of radiation offsite. Should such an accident occur, some significant numbers of the offsite public might be badly contaminated and/or receive large radiation doses. As matters now stand, medical services for such people probably would be inadequate. Therefore, the Board finds that the offsite emergency response plans do not meet the planning standard of 10 CFR 50.47(b)(12).

D. Monitoring Radiation in the Plume Exposure Pathway Emergency Planning Zone.

1. **The Applicants' Onsite Monitoring Capabilities.** The Area Radiation Monitoring System (ARMS) at San Onofre provides initial and continuing assessment on in-plant radiation levels by means of wide-range containment radiation monitors, strategically located. Wide-range effluent monitors are installed on the stack and condenser air ejector of each unit. Other instruments in the system observe locations of possible liquid discharge. All remain functional and are of sufficient range to be useful during emergency conditions. (App. Ex. #51, Table 7-5; Barr, Tr. 7165-66)

2. In addition, the Post-Accident Sampling System (PASS) has the capability to analyze, by means of a multichannel gamma-ray spectrometer, the contributors to the radiation levels in the reactor coolant and the containment atmosphere and thereby to identify and quantify the isotopes present. PASS can be operated remotely from the control building. (*Id.*)

3. Measurements of radiation levels at predetermined locations around the plant can also be made by health physics personnel using portable equipment (and protective clothing and/or breathing apparatus if necessary); the results of these measurements can be transmitted to the Technical Support Center by portable radio and can be used in the same manner as results from the installed instrumentation. (Barr, Tr. 7166-67)

4. Applicants have a meteorological tower located immediately north of Unit 1 and were installing a second tower at the time of the hearings. Both towers have instrumentation that records and displays in the Control Room and in the Technical Support Center, among other things, temperature, lapse rate, wind speed, and wind velocity variability. (App. Ex. #51, Table 7-3; Barr, Tr. 7165)

5. The "source term" is a measure of the radioactive material identified, quantified, and available for release from the containment or from other locations. The source term is calculated, using predetermined constants, on the basis of data from the measurements of radiation levels throughout the plant. This calculation can be made by hand by trained health physicists, at least one of whom is always onsite. It can also be

performed by Applicants' Health Physics Computer which, as described below, will also be capable of more extensive calculations. (Barr, Tr. 7167-69)

6. Once the source term has been established, its effect is predicted by applying atmospheric dispersion coefficients based on available meteorological data and established dose conversion factors, which relate airborne radioactivity concentration to direct dose rate, thyroid dose rate, and lifetime integrated doses. The dose conversion factors are contained in the Offsite Dose Calculation Manual (ODCM). The ODCM provides a methodology for the consideration of multiple pathways or radioactive materials propagated within the Plume EPZ. Upon determination of the projected offsite dose rates, they are provided to the onsite Emergency Coordinator in the Technical Support Center and to the Offsite Dose Assessment Center. (*Id.*, App. Ex. #51, Section 6.2.5)

7. The Applicants are installing a Health Physics Computer which will process meteorological data and data from radiation monitors to calculate doses at various distances from the plant, taking into account variations in local topography. The automated system is scheduled to be fully operational by July 1982. It will be available for connection to the principal offsite response organization. (Sears testimony, August 6, 1981, p. 11; Barr, Tr. 7176)

2. The Applicants' Offsite Monitoring Teams.

8. The plume EPZ has been divided into sixteen 22½ degree pie-shaped sectors, with the plant site at the focus. Should projections or onsite monitoring indicate a potential release of radioactive material offsite, monitoring teams would be deployed to the downwind sector where the plume would be expected, based on known wind velocity. Other teams would enter the sector adjacent to the downwind sector. (Barr, Tr. 7172-73)

9. Each team would consist of (1) a trained health physics technician, who would make the necessary measurements and communicate with the TSC, and (2) a person from the plant maintenance department, who would drive a vehicle, carry monitoring and radio equipment, record readings, and provide any other assistance required by the technician. Each person would have respiratory protection equipment for use if necessary. (Barr, Tr. 7173-74)

10. Significant values of radiation, determined from either direct-reading instruments or from air samples, would be reported immediately by radio to the TSC. The data accumulated by each team would be used at the TSC to upgrade preliminary assessments and to formulate or revise protective action recommendations. (Barr, Tr. 7070-71)

11. At least two offsite monitoring teams (three teams once Unit 3 is operational) could be deployed within about 30 minutes after their need is foreseen. Additional teams could be deployed as additional manpower becomes available. (Barr, Tr. 7070-71, 7173)

12. Through an existing radiological emergency mutual assistance agreement between the Applicants and two other California nuclear utilities — Pacific Gas & Electric Company and Sacramento Municipal Utilities District — additional trained personnel and equipment can be obtained for offsite monitoring and dose assessment. The Applicants also have agreements with two private laboratories for analysis of emergency samples in support of their analytical capabilities at the site. (App. Exs. #101, #51, Appendix E; Barr, Tr. 7174-75)

13. The Intervenor's propose a finding that the resources described in paragraph 14 are located in areas outside the plume EPZ and therefore "could take unreasonably long times in getting to the plume exposure EPZ." (IF 127) We reject the notion that these resources are too far away to be of any practical assistance. First, a very short arrival time would not be critical because they are intended primarily as back-up and supplemental resources. The Applicants' resources would be fully adequate at least for the initial hours of an emergency. Second, these back-up resources, which are contractually obligated to assist in an emergency, could be brought to San Onofre in a matter of hours. The Applicants' private transportation capabilities, including airplanes and helicopters, are extensive and would undoubtedly be used first for transporting emergency personnel. See ¶ K4, below.

14. The NRC Staff has initial responsibility for reviewing the adequacy of the onsite plans. The Staff's witness testified that, on the basis of his review, the Applicants' onsite capability to perform offsite dose assessment and radiation monitoring satisfies the relevant criteria in NUREG-0654 — planning standard I, evaluation criterion 8. This means that, in the Staff's view, the Applicants are capable of making up for any deficiencies in the capability of offsite organizations to conduct offsite dose assessment and radiation monitoring, to the point of performing all of the offsite assessment and monitoring that may be required. (Sears, Tr. 11,033-39)

3. The Offsite Response Organizations' Assessment and Monitoring Capabilities.

15. The assessment and monitoring activities of the offsite organizations are focused on the Offsite Dose Assessment Center (ODAC). The ODAC is located in the Emergency Operations Facility to direct offsite

emergency response organization dose assessment and monitoring activities and to coordinate these activities with the Applicants' monitoring activities and dose assessment. The ODAC is staffed with a coordinator who is a health physicist from the Orange County Department of Health Services. ODAC is also staffed with health physicists, a meteorologist from the Applicants, and other staff required for communications, analytical analyses and maintaining status board displays. The State Department of Health Services may also provide health physicists or other staff in support of ODAC functions. ODAC receives technical data from both onsite and offsite sources on designated communication systems. Technical data from both onsite calculations and offsite measurements are transcribed to hard copy, interpreted, displayed, summarized and disseminated to offsite agencies by ODAC technical staff. ODAC management utilizes the summarized technical data in deploying field survey teams and in making recommendations on protective actions. (App. Ex. #142; Pilmer, Tr. 7379-80)

16. The testimony of witnesses from the principal response organizations demonstrated that they have significant capabilities to perform dose assessment in various parts of the EPZ. (Murri, Tr. 7238-39; Turner, Tr. 8919-21; Killingsworth, Tr. 8294-96)

17. The principal official for emergency planning in Orange County testified (Tr. 8919) that the County has twelve radiation monitoring teams in the area just outside the plume EPZ. Training in radiological monitoring has been ongoing. He considered that the capability in the County for radiation monitoring would be adequate when it receives all of the equipment that was then on order. He viewed Orange County's role as one of assistance to the utility. (Turner, Tr. 8919-21) The principal Orange County health officer essentially confirmed this testimony. (Ehling, Tr. 9942)

18. A witness from the Marine Corps at Camp Pendleton testified that the Marines have in place procedures covering all aspects of emergency response and the trained personnel for executing any course of action ordered. With respect to radiological monitoring and dose assessment, the Marines have the full range of necessary equipment. The one area in which their equipment is not comparable to the Applicants or NRC equipment is in airborne sampling. (Wallace, Tr. 9338, 9356-57)

19. A witness from San Clemente testified that nine firemen had been trained as radiological monitoring team leaders. They would report the results of their surveys to the ODAC and reinforce their EOC's information regarding any offsite consequences of radiation. The City has a total of nine instruments, including three airborne samplers. (Coleman, Tr. 8606-07)

20. The FEMA view of offsite capabilities to assess and monitor was initially quite critical, as reflected in the June 3 Interim Findings (p. 6):

The assessment and monitoring of actual or potential offsite consequences of a radiological emergency condition through methods, systems, and equipment is considered to be weak and in need of improvement to meet minimum criteria. A number of jurisdictions reflected a lack of both equipment and capability to conduct monitoring. . . . Teams need extensive radiological training. A multijurisdictional response capability needs to be developed to assure adequate coverage of plume pathway and to standardize procedures and allow flexibility in response. Air sampling equipment is generally not available. These issues form one of the most critical concerns and are a significant impediment to a total response capability.

21. Mr. Nauman, the FEMA witness at the hearing, viewed offsite capabilities as they then existed more favorably. In response to the question whether those capabilities meet planning standard 10 CFR 50.47(b)(9), he stated that:

Generally speaking, yes. Some equipment is presently not on hand which would enhance the response capability of the local jurisdictions. SOP's are being developed to address procedures for response. Staffing from local, State and Federal organizations is being refined and training is being developed to improve the response capability. (Nauman testimony of August 24, 1981, p. 12)

22. In the November 13 Updated Evaluation (p. 3), offsite assessment and monitoring still did not receive an unequivocal stamp of approval. Under the heading of "Corrective Action Compliance," the following appears:

SOP development for monitoring and assessment duties is in its final stages by the jurisdictions. Drills remain to be conducted to demonstrate their applicability.

23. In support of their proposed findings that there is no reasonable assurance of the adequacy of assessment and monitoring capabilities by offsite response organizations, the Intervenors point to a number of criticisms advanced in the OES and RAC reviews, and the FEMA Region IX Evaluation of the May 13 exercise. As explained hereafter, these documents are entitled to only limited evidentiary weight. (See ¶ E23, above) Nevertheless, they point up the relative complexity of this area and to possible deficiencies in existing offsite plans. (IF 132-143)

24. The overall weight of the evidence on this question is difficult to assess. It is clear that the offsite organizations have been working to

improve their capabilities. On the other hand, it appears that some deficiencies have not yet been corrected; and FEMA believes that a drill is necessary to test the upgraded capabilities.

4. Board Conclusions.

25. It is significant that no party proposes a finding of a present reasonable assurance of adequate assessment and monitoring capability in the offsite response organizations. The Staff proposes a finding that those capacities "will" comply with applicable standards, a predictive finding we could make on an adequate record, but which we decline to make on this record. The Intervenor asks us to find a lack of reasonable assurance. For their part, the Applicants ask us to find that their capabilities alone, without regard to the assessment and monitoring capabilities of the offsite response organizations, are adequate to perform all necessary offsite assessment and monitoring functions in the plume EPZ. Basically, we agree with the Applicants.

26. There is substantial and virtually uncontradicted evidence in the record, and we find that the Applicants have sufficient trained staff resources and equipment, not only to meet their assessment and monitoring responsibilities onsite, but also (at least when supplemented by the resources available to them as described in ¶ 14, above) to carry out all necessary offsite dose assessment, radiological monitoring and related protective action functions in the plume EPZ. This total capability satisfies the planning standard of 10 CFR 50.47(b)(9) in the plume EPZ.

27. Pending improvement and qualification to applicable standards of the corresponding capacities of the offsite response organizations, the NRC will look to the Applicants to perform all necessary offsite assessment and monitoring functions. Accordingly, it will be a condition of the operating licenses that the Applicants' assessment and monitoring capacities, essentially as described in the hearing, be maintained at no less than that level of readiness. This minimum level is to include both meteorological towers and computer system described in ¶¶ 4 and 7, above. The NRC Staff is to confirm that the tower and computer system are fully installed and operating no later than six months after Unit 2 commences full power operations.

28. The evidence does not support an unequivocal finding that the capacities of the offsite response organizations either are, or are not, adequate to carry out necessary dose assessment and monitoring functions in the plume EPZ. In view of our findings concerning the Applicants' capabilities, it is not necessary to resolve that difficult factual question. We find, however, that the offsite organizations do have significant capacities

in trained personnel, equipment, and transportation, and that those organizations could and would assist the Applicants in the event of an emergency.

29. On the basis of the foregoing, we find that the Applicants have demonstrated satisfactorily that any deficiencies in the ability of the offsite response organizations to meet the planning standard of 10 CFR 50.47(b)(9) in the plume exposure pathway are not significant for San Onofre, Units 2 and 3, within the meaning of 10 CFR 50.47(c)(1).

E. Notification to Offsite Response Organizations and Communications Among Emergency Personnel.

1. **Introduction.** Contention 2A concerns the adequacy of the Applicants' procedures for notifying offsite response organizations and for continued communication among emergency personnel by all involved organizations.

2. All reactor operators are trained, tested, and certified in emergency response procedures. One person on each shift is designated and trained to act as the Emergency Coordinator. He has the responsibility, among other things, for classifying and declaring an emergency and for notifying the offsite plant personnel and emergency response organizations. Initial notification is made by an "Initial Notification Form" which is also filled out by the offsite emergency coordinator in each jurisdiction. Later there is a follow-up notification which contains more extensive technical information. (App. Exs. #102, #104)

3. Abnormal conditions at the plant are classified, in order of increasing severity, as an Unusual Event, Alert, Site Emergency, or General Emergency. These classifications have been adopted by the Applicants and the offsite jurisdictions to categorize plant conditions in uniform terms. The events included in each of these classifications are delineated in Applicants' Exhibit #51 and are included in the training of offsite emergency coordinators. Established procedures require that notification be made to offsite personnel and response organizations of events in each of these categories. An Unusual Event must be reported in a timely manner, but not necessarily immediately. However, for conditions falling within any of the other three classifications, every reasonable effort must be made to classify the event and to initiate communication with the offsite organizations within 15 minutes of the initial indication.

2. Notification of Offsite Response Organizations.

4. The Applicants and the response organizations have devised and implemented communications procedures that should allow the free flow of

information among them under essentially any circumstances. The Board finds that the following Applicants' and Staff's proposed findings are supported by the record and adopts them to describe these communications systems.

5. "An Interagency Telephone System (ITS) has been specifically engineered and installed for the purpose of notifying and maintaining continuous communications with offsite organizations. The ITS is a dedicated, private, dial-up party line telephone network connecting the Counties, the Cities, State Parks, USMC and the CHP with SONGS and the interim Emergency Operations Facility (Interim EOF). The ITS is not affected if regular telephone lines are overloaded. At SONGS 2 & 3, the ITS is installed in the Technical Support Center, the Watch Engineer's Office (next to the Control Room) and the Emergency Support Center. Each instrument on the ITS is equipped with a push-to-talk handset, LED lamp to indicate the circuit is being used and a monitor speaker to provide for group listening. Each station on the system may be contacted by using either an "all-call mode" or a selective station call mode. If the circuit is being used, it is possible to interrupt so that the ITS may be used to transmit information requiring immediate distribution." (Pilmer, Tr. 7372-74; Poorman, Tr. 8771-72) (AF 145)

6. "The [ITS] provides 24 hour per day communications with the following jurisdictions: San Diego County; United States Marine Corps Base, Camp Pendleton; Pendleton Coast Office of the State Department of Parks and Recreation, San Clemente; Orange County; City of San Clemente; City of San Juan Capistrano; and California Highway Patrol." (Pilmer testimony, pp. 20-21) (SF 104)

7. "The NRC, Region V, will be immediately notified using a dedicated telephone installed in the SONGS 2 & 3 Control Room." (App. Ex. #51, pp. 3-6, Table 7-1; Ray, Tr. 7143) (AF 146)

8. "An alternate method for notification of and communications with the offsite emergency response organizations, in addition to the ITS, is through the SCE Energy Control Center (ECC). Under this system, the Emergency Coordinator at SONGS notifies the ECC on a microwave telephone system which, in turn, notifies and activates the State Warning Center in Sacramento, California. The State Warning Center has 24-hour per day notification and communication capability with the Counties. In the event of failure of the ITS or because of other circumstances, the ECC, upon notification from SONGS, would implement its back-up procedure for notifying principal and supporting Federal, State and local emergency response organizations. The ECC is continuously staffed and has reliable primary and back-up communications with SONGS, other utilities and the potentially involved Federal, State and local organizations." (App.

Ex. #51, Section 7.5; Pilmer, Tr. 7374-75, 9192-94; Poorman, Tr. 8783-84; Reed, Tr. 10,258) (AF 147)

9. "In addition to the ITS and the microwave telephone system to the ECC, SONGS has other communications capabilities for notification of offsite agencies, consisting of a regular telephone system, a VHF radiosystem to USMC, a UHF radio system to State Parks, additional dedicated telephone circuits to the Interim EOF and a "hard copy" teletype system to the Interim EOF and the Emergency Media Center. In addition, an Orange County Automatic Teletype System terminal is being installed at SONGS to provide hard copy communications with the County EOCs, the Interim EOF and Orange County's Control One Communications Center." (App. Ex. #51, Table 7-1; Ray, Tr. 7147-48; Cramer, Tr. 7068-69; Poorman, Tr. 8764) (AF 148)

10. On the basis of the foregoing findings, we find that the Applicants have effective, redundant and thus more than adequate capability promptly to notify and thereafter to communicate with the offsite response organizations in an emergency situation.

3. Communications Between Response Organizations and Their Emergency Personnel.

11. The Applicants have the capability to notify and mobilize their own offsite personnel on a 24-hour per day basis. (App. Ex. #51, Section 6 and Appendix A; Ray, Tr. 7130-31, 7151-53, 7842-43; Barr, Tr. 7174-75, 9066-72)

12. FEMA presented testimony which addressed the overall ability of offsite response organizations to notify and communicate with their own emergency personnel. Mr. Nauman testified that plans and procedures currently exist for such notification and communication, and that they meet the standard of 10 CFR 50.47(b)(6). (Nauman testimony, August 24, 2981, p. 7)

13. The following findings of the Applicants and Staff, as indicated, outline the communication links of the various jurisdictions. We adopt them as our own.

14. Orange County has a highly sophisticated communications system with procedures and "capability for notifying and alerting key County agencies and decisionmakers, the Orange County Transit District, the City of San Juan Capistrano, the Capistrano Unified School District, the Red Cross, all County and local law enforcement agencies in the County, the CHP, CALTRANS, as well as fixed and mobile medical support facilities on a 24-hour per day basis." (App. Exs. #53, Sec. V.A. and B.; #152; Turner, Tr. 8913, 9003-04; Poorman, Tr. 8757-58, 8765-66; Fox, Tr. 9041-42) (AF 158)

15. "The City of San Juan Capistrano does not have personnel available to man its dedicated emergency communication link (yellow phone) on a 24-hour per day basis. However, the County of Orange would assume the responsibility for alerting personnel." (Nauman, Tr. 10,511-12) (SF 94)

16. State parks located in the plume EPZ have the capability to notify their emergency response personnel on a 24-hour per day basis. (Stowe, Tr. 8515-18; Nauman, Tr. 10,516-19)

17. "The Capistrano Unified School District has the procedures and capabilities for notifying and alerting the various schools, District decision-makers, and bus transportation dispatchers involved when school is in session." (App. Exs. #139, #140; Swanson, Tr. 8797-99) (AF 160)

18. San Diego County has a communications system, which includes a 24-hour dispatch system, and a total capability to respond. (Nauman, Tr. 10,510, 10,520) The County has "the capability for notifying and alerting key County agencies and decisionmakers, Santa Fe Railroad, the U.S. Coast Guard, the U.S. Border Patrol (San Onofre Station), the CHP (who notifies CALTRANS), the Cities of Carlsbad, Encinitas, Vista, San Marcos, Fallbrook and Oceanside. . . ." (App. Ex. #54, App. VI.D, and Section VIII.B, #153(c); Hunt, Tr. 9266) (AF 159)

19. "CALTRANS has the procedures and capabilities for notifying and alerting its personnel on a 24-hour per day basis." (Roper, Tr. 8332, 8334-35, 8360-62) (AF 161)

20. "CHP has the procedures and capabilities to notify and alert its personnel on a 24-hour per day basis." (Killingsworth, Tr. 8270, 8285-86) (AF 162)

21. "The USMC has the procedures and capabilities to notify and alert emergency response personnel on a 24-hour per day basis." (App. Ex. #58, K-A; Wallace, Tr. 9332) (AF 163) Col. Wallace "testified that the Corps has the dedicated (yellow) telephones along with a system to handle 10 other phones which are preplugged into the area inside their EOC. There are three dedicated telephones (yellow), one of which is manned 24 hours a day all year round, and the duty officer who mans it has been instructed in the event it is activated. Through the yellow phone and the regular telephone system, the Corps has communication links with Orange County and other jurisdictions. Col. Wallace also testified that radio-equipped vehicles with high powered transmitters are used for backup communications." (Wallace, Tr. 9329-30, 9332) (SF 120)

22. In the event of a radiological emergency at San Onofre, the State EOC would be activated and radio contact would be made with Orange and San Diego Counties. (Kearns, Tr. 10,176)

23. Should the Applicants or the other response organizations send monitoring teams into the field, the teams will be equipped with radios for communication to San Onofre and the Offsite Dose Assessment Center. (Barr, Tr. 7171; Pilmer, Tr. 7379-80, 7394-96; Poorman, Tr. 8760)

4. Intervenor's Proposed Findings.

24. The Intervenor's propose that we find a number of deficiencies in the Applicants' case on this contention, and a lack of the required reasonable assurance. (IF 67-81) They rely in major part on the informal review conducted by FEMA Region IX's Regional Assistance Committee (the so-called "RAC Review") dated April 27, 1981 (Int. Ex. #13) and on another informal review conducted by the State Office of Emergency Services (OES) apparently at about the same time. Although these reviews were admitted into evidence, they are not, generally speaking, strong evidence of the facts they assert. Most importantly, emergency planning and procedures were undergoing rapid change, development and improvement between the time of those reviews and the hearing, and to some extent thereafter. Most of the changes were in response to criticisms like those in the RAC and OES reviews. Accordingly, if uncontradicted evidence was introduced at the hearing which reflected a change in response to a criticism in the RAC or OES reviews, we would generally credit that later evidence. For example, the matters cited in IF 68 were rebutted by evidence at the hearing. And the evidence of the FEMA witness present at the hearing and subject to cross-examination would override a conflicting statement in the RAC review. Moreover, neither the RAC nor the OES reviews are entitled to any special evidentiary status in this proceeding. By contrast FEMA findings are to be accorded the effect of a rebuttable presumption.

25. The Intervenor's suggest that the plans for Orange and San Diego Counties provide for periodic testing of communications, but that the plans for San Clemente, San Juan Capistrano and the State Parks do not. But as the Applicants point out, it would not be possible to test the County plans without contacting the Cities and the Parks. (IF 70; Applicants' Response dated December 10, 1981, p. 20)

26. Contrary to IF 79, we do not believe it necessary that all jurisdictions have the capability to communicate *directly* with federal and/or State offices, in light of the demonstrated ability of the principal response organizations to communicate with all jurisdictions, local, state, and federal.

27. The Intervenor's remaining proposed findings for the most part cite various criticisms and recommendations from the RAC or OES reviews or the June 3 FEMA findings and propose that we find deficiencies

on these bases. In view of our later findings, the limited significance we attach to the RAC and OES reviews, and the subsequent remedial actions taken in response to the FEMA recommendations, a point-by-point analysis of these matters is not warranted. We note two additional considerations, however.

28. Some of the proposed Intervenor's findings simply ignore contrary evidence in the record. For example, IF 81 states that the plans of Orange and San Diego Counties do not address "continuous communication with state government." We are urged to conclude from this that "there is no assurance that the capability for communications between principal response organizations and the state of California exists." Yet it was the Intervenor who elicited testimony from a State witness that Orange and San Diego Counties have radio contact with the State OES. (Kearns, Tr. 10,176-77)

29. Finally, what we are seeking here is a "reasonable assurance" of good communications ability, not an ironclad guarantee that every participant in an emergency can communicate instantly with every other participant at all times. All of the significant participants have substantial communications ability. The most important participants, the Applicants and Orange County, have very sophisticated and redundant capabilities. Between them, they can contact all of the emergency response and back-up organizations. There are substantial back-up capabilities, for example, in the Marine Corps at Pendleton and the CHP. Taken together, these capabilities meet any reasonable standard of reasonable assurance.

30. Based on the foregoing, the Board finds a reasonable assurance that the procedures for notification by the Applicants of State and local response organizations meet the planning standard of 10 CFR 50.47(b)(5), and that the procedures for notification of and continued communications among emergency personnel by all involved organizations meet the planning standard of 10 CFR 50.47(b)(6).

F. Public Education and Information.

1. **Introduction.** Contention 2C addresses the adequacy of the ongoing public education and information program concerning how the public will be notified and what actions they should take in an emergency.

2. Mr. Eugene Cramer appeared as the primary witness for the Applicants. Mr. Cramer testified that in designing the program for public education and information, the Applicants worked closely with the principal local response organizations. He also testified how the Applicants plan to make information available periodically and to educate the public in advance on what should be done in the event of an emergency. (Cramer testimony, pp. 7-19)

3. Mr. Cramer described the contents of the information that will be provided to the public and the efforts that will be made to assure that both resident and transient populations receive it. The educational program will be a continuing one, to be repeated annually; it is designed for both residents and transients. (Cramer testimony, pp. 7-18, Tr. 7040-51)

4. The program includes posters given to businesses and organizations, newspaper advertisements, announcements on cable TV and local radio stations, presentations to neighborhood groups and organizations, and the distribution of information to new residents when they apply for electric service. (Cramer testimony, pp. 7-18)

5. Emergency information will also be provided to residents and transients by means of telephone directory inserts, decals in telephone booths and material placed in rooming establishments and hotels. (Cramer, Tr. 7049; App. Exs. #69-71)

6. The Applicants will conduct annual briefings with the news media concerning the public information program, and these briefings will include updates on the emergency plans, information about radiation, and the points of contact for release of public information during an emergency. (Cramer testimony, pp. 34-41)

7. If there are changes in the information which should be known to the public, revisions will be provided in the annual program update, or earlier if needed. The annual update will check and resupply posters and placards. Businesses will be checked and resupplied with pamphlets and posters, and radio, TV and community organizations will be checked for presentations. Publicity releases will be used and new newspaper advertisements will be placed. Additionally, periodic utility bill inserts will be used to try to assure that residents know of and have copies of the Pamphlet and Handbook. (Cramer, Tr. 7051-52)

8. Mr. Cramer's testimony as just summarized was essentially uncontradicted, and the Board accepts it.

2. Content of Public Education and Information Program.

9. The Applicants, in their Proposed Findings Nos. 323-325, have presented an accurate description of the contents of their public education and information program. The Board adopts those findings and repeats them in the three following paragraphs.

10. "The principal means for providing specific information on responses to an emergency will be an Emergency Response Pamphlet ('Pamphlet') prepared by Applicants in conjunction with local planning officials and based on the local emergency plans. The Pamphlet addresses the following subjects relative to proper actions to be taken during an emergency:

- Public notification of an emergency;
- Protective actions to take (including sheltering, evacuation and reception and care facilities);
- School children;
- Preparing for an emergency;
- Obtaining special assistance for handicapped;
- Dos and Do nots in an evacuation; and
- Maps containing area designations, public transportation assembly points and evacuation routes and reception centers.”

(App. Ex. #66; Cramer, Tr. 7042-43)

11. “Applicants have also prepared an Emergency Information Handbook (‘Handbook’) which, among other topics, covers general information about radiation, including radioactivity releases and radiation effects. The objective of the Handbook is to provide individuals with a basic understanding of how and why emergency responses were developed and will be applied and how and why various protective actions will be effective. The Handbook will be mailed to all mailing addresses within the Plume EPZ and Extended EPZ. It will also be made available through local governments and community groups for distribution within the community.” (App. Ex. #148; Cramer, Tr. 7047-48, 7454-55, 7506-07)

12. “The Handbook and Pamphlet each provide contacts for additional information both prior to an emergency and during an emergency. In addition, Applicants have taken other steps to provide contacts for information prior to an emergency and during an emergency. Such measures include identifying radio stations which will broadcast emergency information, newspaper advertisements, telephone book inserts, posters and placards, utility bill inserts, and community meetings, as well as special cards to be returned by those persons wishing additional information or special assistance.” (App. Exs. #66, #68-71, #123-130, #148; Cramer, Tr. 7044-48; Sears, Tr. 10,687-90; Stowe, Tr. 8493-97; Coleman, Tr. 8577-80; Ferguson, Tr. 8693-94, 8717-18; Turner, Tr. 8908-09; Hunt, Tr. 9265; Wallace, Tr. 9328-29; Nauman, Tr. 10,540-42, 10,926; Sears, written testimony (August 6, 1981), p. 6, Tr. 10,644)

3. Public Information Efforts in Particular Areas.

13. Mr. Stowe of the California State Department of Parks and Recreation testified that the Applicants have provided various posters and flyers for use at the State Park beaches. State Park personnel worked with the Applicants in developing these and approved the content. Bulletin boards will be installed for the posters, and State Park personnel will maintain these to assure that the posters are legible and have not been

defaced. Flyers will be available at and distributed from the entrances to the beaches and campgrounds. (Stowe, Tr. 8493-96)

14. Mr. Coleman, Director of Fire Protection and Deputy Director of Emergency Services for the City of San Clemente, testified that the City had cooperated with the Applicants in the development of the public education program for San Clemente. He testified that the material that has been distributed contains essential information about the City's emergency plans, and he described the City's efforts to identify those residents who have special needs. The latter information will allow providing for those persons in the event of an emergency. (Coleman, Tr. 8577-79)

15. Ms. Ferguson, Administrative Assistant to the Director of Public Works of the City of San Juan Capistrano, testified that she was involved in the development of the public education program for the City. San Juan Capistrano does not have the capability to provide transportation to individuals having special needs. Ms. Ferguson testified that the County of Orange would process the response cards received as a result of the Applicants' mailing and that the County will make the transportation arrangements necessary for those persons with special needs. (Ferguson, Tr. 8693-95)

16. Ms. Swanson, Safety/Energy Coordinator for the Capistrano Unified School District, testified that the School District will cooperate with the Applicants and will assist in the implementation of the public education program. She testified that the School District would provide notification to the students and parents concerning the availability of public information programs and could provide school facilities and speakers to present the programs. (Swanson, Tr. 8796-97)

17. Mr. Turner of the General Services Agency of the County of Orange testified that the County had been involved with the Applicants in the development of the Orange County public education program. The County has received responses from the Applicants' mailing of the emergency information pamphlet and is processing those responses to make arrangements for those persons having special needs. He also testified that the County would reinforce the Applicants' public education program with periodic presentations to civic groups. (Turner, Tr. 8907-09)

18. Mr. Hunt, Director of the Office of Disaster Preparedness of the County of San Diego, testified that the County has a public education program for its citizens. The County has disseminated its information using radio and TV, by feature articles in newspapers and through the distribution of pamphlets and brochures. The County also plans periodic release of information through these same sources. (Hunt, Tr. 9265)

19. Lt. Col. Wallace, Operations/Plans/Budget Officer of the Office of the Assistant Chief of Staff, Operations and Training, U.S. Marine

Corps Base, Camp Pendleton, testified that they had distributed a public education document concerning responses to an emergency to all residents of Camp Pendleton. (App. Ex. #67) He also testified that there will be additional efforts to educate the residents of the Base. (Wallace, Tr. 9327-29)

20. The testimony of these witnesses, as summarized here, was essentially uncontradicted, and the Board accepts it.

4. NRC Staff Position.

21. Mr. Sears was the Staff witness on this contention and he provided both oral and written testimony. That testimony concerned the Staff's evaluation and review of the Applicants' educational program and is summarized in the Staff's proposed Findings of Fact Nos. 160-164. In their Proposed Finding No. 164, "The Staff concluded that the Applicants' procedures for dissemination of information to the public within the plume exposure pathway EPZ on how the public will be notified and what its initial actions should be in the event of an emergency, satisfies the criteria of NUREG-0654, II.E and Appendix 3, and meets the planning standard of 10 CFR § 50.47(b)(7)."⁵⁹

5. FEMA Position.

22. Mr. Nauman of FEMA presented oral and written testimony on this contention. He testified that an emergency public information program has been established and that the public within the plume exposure pathway is being notified. Moreover, the program is ongoing in nature and the local jurisdictions have identified procedures for the dissemination of information to the public. Mr. Nauman concluded that the procedures for periodically disseminating information to the public within the plume exposure pathway EPZ meet the planning standard of 10 CFR § 50.47(b)(7). (Nauman testimony, pp. 8-9, Tr. 10,543; 10,926)

23. The FEMA "Update Evaluation" of November 1981 states at page 3, concerning "Corrective Action and Compliance" since May 22, 1981, that: "The Public Information program was submitted and is satisfactory." This confirms the weight of the evidence on this Contention.

6. The Intervenor's Evidence and Proposed Findings.

24. Ms. Ditty, Executive Director of the San Clemente Seniors, Inc., testified that some members of the older population would need help in

⁵⁹ The Staff's proposed finding referred to planning standard (b)(5), not (b)(7). Apparently, this was an inadvertent error.

completing response cards and that others would forget information after learning of it because of senile dementia. However, she also testified that her organization would be willing to assist in identifying and notifying those elderly people needing assistance. (Ditty, Tr. 9848; 9860-61; 9864-65)

25. Mr. Mecham, a teacher, a member of the City Council of San Clemente, and Mayor Pro-Tem of San Clemente, appeared as an individual and not as a representative of the City. (Mecham, Tr. 9999) He testified that he was concerned as to whether the educational and informational programs for San Clemente were sufficiently intensive and comprehensive to educate the public adequately to respond in the event of an emergency. He also testified that he would cooperate in the educational program for the citizens of the City of San Clemente. (Mecham, Tr. 10,039-41; 10,065-66)

26. Mr. Fleming, Chief of the Mobility and Communications Barrier Section of the California Department of Rehabilitation, testified that physically disabled persons would need particular educational effort to prepare for evacuation or for an emergency. However, he testified that his Office would assist the Applicants in identifying the groups representing the handicapped population in the area of concern. (Fleming, Tr. 10,118; 10,120; 10,122-23)

27. Ms. Bloom, a member of the Planning Commission of the City of San Clemente and a business owner in the City, expressed concern about how transient populations may be informed of how to respond in an emergency. In cross-examination she testified she would display posters at her place of business and in her rental apartment and would assist in informing the transient population of San Clemente of emergency plans and procedures. (Bloom, Tr. 10,302-06; 10,310)

28. Mr. Carvalho, City Manager of San Clemente, testified that he had participated in the May 13, 1981 exercise in the role of Director of Emergency Services. He stated he was concerned about premature release of information to the public without coordination of those responsible for protective actions. During cross-examination he testified it was his intention to work with the Applicants in the development of a comprehensive and thorough educational program for the City, and he also knew of plans to coordinate the release of information to the public in the event of an emergency. (Carvalho, Tr. 10,795; 10,809)

29. Ms. Logue, the Director of a special education school in San Clemente and the president of a volunteer human service group, testified as an individual. She testified that the special populations she was familiar with needed more information and training on responding to an emergency. She also testified she would share her knowledge with the Applicants and

would work with them in providing for these special populations. (Logue, Tr. 10,070-72; 10,082; 10,093)

30. In their proposed findings the Intervenor expressed criticism of the content of the posters being used and concern that no effort was being made to reach those residents who speak only Spanish. They also expressed concern about insufficient efforts to reach renters who do not have electric service in their names, and that the efforts of the local jurisdictions are not coordinated. (IF 91-94) They also note a "major" concern expressed by FEMA in the Interim Findings issued June 3, 1981, having to do with the credibility and terms used in the advance public information dissemination. (IF 95) They further urge the license condition that there be a repeat mailing of the pamphlet and handbook on an annual basis (IF 97)

31. The Intervenor conclude in their Finding No. 98, that with the above matters corrected, "there is some degree of assurance that SCE will provide information to the public on what to do in the event of a radiological emergency at SONGS."

7. Board Conclusions.

32. No evidence was presented to the Board on the size of the population in the San Onofre area that speaks only Spanish. (Carvalho, Tr. 10,809; Mecham, Tr. 10,043-44; 10,066) Therefore, we have no basis for deciding whether special efforts are required to reach non-English speaking persons in the EPZ. We note, however, that in some areas of the country, including Washington, D.C., portions of mass mailings by some utilities are printed in Spanish, suggesting some need for this approach. We surmise that such a need might be comparatively greater in Southern California. The Board refers this question to the Staff for resolution. The Staff and Applicant are to work together to determine what further efforts, if any, are required.

33. We see no justification for requiring an annual or more frequent mailing of the pamphlet and the handbook. Permanent residents do not need an extensive collection of duplicates of these documents. We assume that new mailings will be made if and when these documents are substantially revised. Beyond that, the periodic exercises should reflect any need that may arise for a new mailing.

34. As to the other matters of concern expressed in the Intervenor's proposed findings, we do not find them to be significant, in light of the extensive evidence presented by the Applicants of a carefully conceived and thorough program, and the testimony of the Staff and FEMA witnesses. The educational program should reach virtually everyone in the EPZ, including special groups such as the aged and handicapped. In conclusion,

we find that the information and procedures for dissemination of the information to the public within the plume exposure pathway Emergency Planning Zone on a periodic basis on how they will be notified and what their actions should be in the event of an emergency meet the planning standard of 10 CFR § 50.47(b)(7).

G. Emergency Notification and Instruction of the Public.

1. **Introduction.** Offsite emergency planning officials, working with the licensee, must establish "means to provide early notification and clear instruction to the populace within the plume exposure pathway emergency planning zone." (10 CFR 50.47(b)(5)) The adequacy of these means at San Onofre is raised by Contention 2B.

2. The Applicants and the Staff, while stressing different points, are in agreement that the public notification and instruction requirements have been met. The Intervenor challenge that conclusion, but the bases of their disagreements are specific and relatively narrow. As a result, most of the affirmative findings proposed by the Applicants and Staff are uncontested. Accordingly, we will confine ourselves to brief and rather general summaries of uncontested matters after determining that they are supported by the underlying record. Matters contested by the Intervenor will receive more detailed treatment.

2. Uncontested Matters.

a. The Siren System.

3. The Applicants commissioned studies which considered the topographical and ambient background noise characteristics of the plume EPZ. The studies resulted in plans showing the number of sirens needed, given available intensity ratings, and potential siren locations in the plume EPZ which would cover all populated areas with an alerting signal. (Dubois, Tr. 7001)

4. In establishing their siren system, the Applicants followed the guidance set forth in Appendix 3 or NUREG-0654, including the FEMA publication "Action Warning Systems Guide," CPG-1-17. (Dubois, Tr. 7002)

5. The sirens are designed to produce sound levels 10 decibels above daytime ambient noise levels 98% of the time. This requires varying noise levels in different areas, ranging from 60 decibels in residential areas to 70 decibels in areas close to the freeway or major shopping centers. (Dubois, Tr. 7006-07)

6. The sirens are designed so that all persons out of doors (other than those with serious hearing impairments) will hear them, including people in the surf off the beaches in the plume EPZ. As for people located indoors, there should be 100% siren coverage at night, when ambient noise levels are lower. During the day, when noise levels are higher, most people indoors will hear the sirens, and almost everyone indoors will hear at least a portion of the three-to-five-minute signal. (Dubois, Tr. 6926, 6940, 8733-38)

7. A total of forty sirens have been installed. The location of these sirens in the EPZ and their coverage is shown in App. Exs. #60 and #135. See Dubois, Tr. 7001, 8134.

8. Except for sirens at the State parks and beaches, sirens will be controlled by the jurisdictions in which they are located. Except for one place where other comparable arrangements have been made, the locations where the sirens are to be activated will be manned at all times. (Dubois 7016-17; Ferguson, Tr. 8712; Coleman, Tr. 8584)

9. When activated, each siren will generate a three-to-five-minute steady signal. Educational information already provided to people in the plume EPZ informs them that such a siren signal means: "Turn on radio or TV and listen for essential emergency information." (App. Exs. Nos. 66, 67, 69-71, 123-130, 148; Dubois, Tr. 7009; Cramer, Tr. 7043)

10. Installation of the sirens has been completed. Although not yet tested at the time of hearing, the sirens presumably⁶⁰ have been tested and any necessary adjustments made by now. We will include among our license conditions one requiring the NRC Staff to certify to the Board that the siren system has been shown to perform in accordance with its technical specifications.⁶¹

b. Alternative Means for Alerting the Public.

11. Should a part of the siren system for any reason fail to function, alternative means exist to provide a prompt alert to the public concerning an emergency. Vehicles and helicopters from the California Highway Patrol, Orange County Sheriffs Department and State Parks are equipped with loudspeakers and could be used to alert the public instead of or as a supplement to the siren system. Vehicles and helicopters from Camp

⁶⁰ Cf. 10 CFR Part 50, Appendix E, paragraph D (Notification Procedures) 3, as amended, which required licensees to demonstrate that their prompt alerting systems were established by February 1, 1982. See 46 Fed. Reg. 63031.

⁶¹ Long after the record was closed, we received a copy of a letter dated April 26, 1982 from the Mayor of San Clemente to the Commission questioning the adequacy of the siren system. The Board is looking into this matter. See footnote 56, above, and accompanying text.

Pendleton could also be called upon to assist. Virtually instantaneous communications can be made with these vehicles by radio. (Ex. #53, Section V.B.2.a.(1); Roy, Tr. 7156; Posimon, Tr. 8763; 8779-80; Killingsworth, Tr. 8271-72; Turner, Tr. 8916; Hunt 9273; Wallace, Tr. 9342)

c. Development of Public Instruction.

12. The Applicants and the local jurisdictions have prewritten instructions for the public in their emergency plans. Representatives of the Applicants and all of the local jurisdictions are working for greater consistency in their prewritten instructions. These efforts were to be completed before fuel load. The Board will ask the Staff to confirm that that objective has been achieved. (App. Exs. #112, #152(d), #154(d); Turner, Tr. 9005; Coleman, Tr. 8599-600; Pilmer, Tr. 11,113)

d. Physical Means for Prompt Public Instruction.

13. The primary means for instructing the public would be through the Emergency Broadcast System ("EBS"). The EBS permits emergency messages to be broadcast over cooperating radio and television stations to insure accurate and prompt communication with the public. (Cramer, Tr. 7043-44; Poorman, Tr. 8757; Hunt, Tr. 9272-73; Turner, Tr. 8915-16)

14. In addition to the EBS, San Clemente has individual arrangements with a radio station there for broadcasting emergency information. (Coleman, Tr. 8196-97) Other means of prompt communication include the Marine Corps and Coast Guard communications systems and loud-speaker equipped emergency vehicles, including helicopters, as described in paragraph 11, above. The Board finds that presently available physical means for prompt public instruction are redundant and more than adequate for any foreseeable emergency. (Wallace, Tr. 9372-73; Pilmer, Tr. 9211-12; Killingsworth, Tr. 8271-72; Coleman, Tr. 8597-98; Nauman, 10,509)

15. Rumor control is an important element in public instruction. Information to control rumors can be coordinated through the Interagency Telephone System and the Southern California Edison and San Diego Gas and Electric Customer Information Systems. These systems allow for coordinated release of information to the public to prevent rumors from starting or to dispel existing rumors. (Cramer, Tr. 7067-7074)

e. Administrative Means for Prompt Public Instruction.

16. Each involved agency in the local jurisdictions has identified a public information office ("PIO") to coordinate the flow of information to the media and to be a contact person for the media. (Cramer, Tr. 7052; App. Ex. #72)

17. If and when the Emergency Media Center ("EMC") is established, a PIO from each jurisdiction will move there, with another PIO remaining in the local jurisdiction. (Cramer, Tr. 7054, 7063, 7065)

18. The EMC can be activated very quickly after an emergency has occurred. The EMC will have communications established with the San Onofre facility, the Applicants' headquarters, the EMC's of Orange and San Diego Counties, the Cities of San Clemente and San Juan Capistrano, and other concerned agencies. It will be well situated to aid in the exchange of current and accurate information between agencies, the PIOs, and the media. (Cramer, Tr. 7062-63, 7065-66; App. Ex. #77)

3. The Intervenor's Evidence and Proposed Findings.

19. The Intervenor's propose that we find several specific shortcomings in the public notification and instruction plans presented at the hearing. We deal with each of these criticisms below.

a. Inadequate Siren Coverage.

20. As discussed previously (pp. 95-98, above), full siren coverage does not extend beyond the 10-mile EPZ line to a populated area of San Juan Capistrano and to Dana Point. The Intervenor's urge that siren coverage be extended to those areas. (IF 83) We agree, and are imposing a license condition to bring that result about.

b. Emergency Notification of Boaters.

21. The Intervenor's express concern about inadequate notification of near-shore⁶² boaters. They believe that the option of dispatching boats from San Diego to notify boats near the reactor would not meet the 15-minute notification criterion in 10 CFR Part 50, Appendix E, ¶ IV.D.3. The Intervenor's suggest that a preferable option for notification of offshore

⁶² The plume EPZ, as depicted in the plans, stops at the water's edge. One could argue that the EPZ for an on-shore reactor like San Onofre should extend for a 10-mile radius out to sea, and that notification responsibilities extend correspondingly. Presumably, the potential radioactive effects of a plume extend about as far over the sea as over the land. But the analogy breaks down at various points. "Ground" contamination problems would not be comparable, evacuation would be much simpler, and there would be no "local jurisdiction" to hold responsible, except perhaps the Coast Guard. There was no attempt in this case to canvass all of the similarities and differences between land and sea in order to establish some specific boundary for a "Marine EPZ." Rather, in discussing this problem, it was assumed (if not articulated) that we were talking about small boats within, say, a mile or two of shore. It seems reasonable to assume that larger boats further out would have relatively sophisticated communications equipment to receive word of the emergency and would, in any event, pass through the possible danger area in a short time.

boats would be the "NOAA" radio system. The NOAA system was described as a system of installed radio receivers which can be triggered automatically in an emergency. (IF 84-86) It provides immediate notification to people in their homes, boats and other places where a receiver may be installed, by either prerecorded or live messages. In addition to notification, it also was said to provide immediate information about steps people should take, as contrasted to the Applicants' proposed two-step system of notification by siren, followed by information from radio or television stations. (Mecham, Tr. 10,045-48)

22. We agree with the Intervenor's that dispatching boats from San Diego to alert boaters offshore from the reactors would be a relatively slow method of notification and therefore not preferred. However, contrary to the Intervenor's proposed finding, neither the State Parks, nor NRC officials, nor anybody else recommended this method of notification. The State Parks' witness testified that they would use a rescue boat they keep at nearby Doheny Beach. This is a 30-foot motor launch, equipped with a loud speaker, and having a qualified pilot available virtually all of the time. (Stowe, Tr. 8492-93, 8533-34) The NRC witness testified that the Coast Guard in San Diego would be notified and that they would immediately send a radio alert on marine channels to boaters. They could then follow up with a helicopter that could reach the scene in about ½ hour. (Sears, Tr. 10,678) Helicopters with loudspeakers would also be available from closer sources, including Orange County and Camp Pendleton. (See ¶ D11, above)

23. We believe that local authorities could come close to meeting the 15-minute criterion for most boaters, particularly with prompt dispatch of a helicopter. However, we do not think that that criterion should be deemed fully applicable to the "marine EPZ" situation.⁶³ There is nothing in Appendix E to suggest that separate consideration was given to the factors distinguishing offshore areas from the land for notification purposes. But at least one factor suggests that more time can safely be allowed to notify boaters. Once they are notified, they can start out of the 10-mile area immediately and probably get out of it entirely in an hour or less. By contrast, it may take six to eight hours to evacuate an EPZ on land, factoring in everything from calling the children, to gathering belongings, to finding the dog, and then driving off into traffic.

24. The NOAA system, as briefly described in the record, might well be a useful supplement to existing means of notifying boaters, the only identifiable group that would hear an automatically activated radio signal,

⁶³ See n.62, p. 1268, above.

but not a siren. The informal review of the San Onofre plans conducted by FEMA's Region IX Regional Assistance Committee suggested that NOAA devices should be considered by planning authorities "assuming the planning zones extend over water." (Int. Ex. #13, p. 9) NOAA systems are also referred to favorably in NUREG-0654, App. 3, p. 2. These references, however, are not equivalent to a requirement, and we would not impose them as such in the absence of cost and effectiveness data and a record showing some significant deficiency in the proposed means for notifying and instructing the public. We have no such data and we find no such deficiency.

25. The Applicants point to the EBS system as the "primary means" for providing prompt emergency instruction to the public. (AF 365) The Intervenor's cite some early FEMA documents as evidence that for radiological emergency purposes the EBS system is deficient in certain respects. The FEMA Region IX evaluation findings of the May 13, 1981 exercise (Int. Ex. #14, II-1) cited certain readily curable coordination problems. The June 3 FEMA interim findings (Int. Ex. #15, p. 5) asserted without any elaboration that the EBS network "requires further testing through drills and exercises to assure operational capability." On the other hand, the FEMA prepared testimony at the hearing did not refer to the EBS system, although certain problems with siren notification are discussed. (Nauman testimony, p. 8, Tr. ff. 10,372) This indicates that any current problems FEMA may have with the EBS system are not very significant.

26. EBS is presently in place in San Diego County and is now being arranged for in Orange County. (Hunt, Tr. 9272-73) Until the Orange County arrangements are completed, officials there can look to the Los Angeles County EBS, or to individual stations. (Turner, Tr. 8596-97)

27. In the circumstances presented here, the Board does not believe that an effective EBS or some comparable broadcasting arrangement requires very much in the way of advance coordination and testing. Given the existence of standardized instructions (which are being prepared) and good communication between radio stations and decisionmaking officials (which exists), it is reasonable to assume, and we find, that effective radio communication of emergency instructions to the public would take place, if required. It is scarcely conceivable that a radio station manager would not immediately grant a request from duly authorized local officials to broadcast emergency instructions, whether pursuant to prearrangement or *ad hoc*. After the request is granted, it is a simple matter of having a professional broadcaster read a prepared message into a microphone.

28. In conclusion, we find that adequate means have been demonstrated for notification and instruction to the populace within the plume

EPZ within the meaning of 10 CFR 50.47(b)(5), subject to Staff confirmation of siren adequacy and any action we may take as a result of today's Order on that subject.

H. Emergency Response and Augmentation Capability.

1. Introduction. In Contention 2F, we are being called upon to decide whether there is reasonable assurance that the capabilities of the principal response organizations are sufficient to respond and to augment that response on a continuous basis in the event of an emergency. As indicated by the regulatory standard upon which it is based, the main thrust of this contention is the depth of resources, particularly in staffing, possessed by response organizations.⁶⁴ The Intervenors did not present any witnesses whose testimony was primarily on this issue, although their subpoenaed witness, Mr. Kearns, identified the State of California organizations that can be called upon to support the principal response organizations should such a need arise. Our findings and conclusions are therefore derived largely from the testimony provided by the Applicants, the Staff and a FEMA witness.

2. The Principal Response Organizations.

2. The primary witness for the Applicants was Mr. Murri, Supervisor of Health Physics Applications, NUS Corporation (NUS). NUS has been engaged by Southern California Edison in assignments related to both onsite and offsite emergency planning and preparedness at San Onofre since 1979. (Murri testimony, p. 1)

3. Mr. Murri testified that the principal offsite response organizations for San Onofre are:

- The Unified San Diego County, Office of Disaster Preparedness;⁶⁵
- The U.S. Marine Corps - Camp Pendleton;
- The State Department of Parks and Recreation - Pendleton Coast Office;
- The City of San Clemente; and
- The Orange County General Services Agency, Division of Emergency Services.

⁶⁴ This contention is based upon the final clause of 10 CFR 50.47(b)(1), which concerns whether "each principal response organization has staff to respond and to augment its initial responses on a continuing basis."

⁶⁵ San Diego County might be regarded as a "principal response agency" because much of it is within the ingestion EPZ. However, since only two small uninhabited parts of it are within the plume EPZ, and since this case focuses on that zone, we do not view it as a principal response agency in this case.

Moreover, Mr. Murri testified that he had reviewed the response planning and plan implementation capability of these organizations, and it was his opinion that each of these organizations has the capability to respond to an emergency at San Onofre, affecting the offsite transient and permanent population, and to augment that initial response on a continuous basis. (Murri testimony, p. 68-71)

4. The Intervenors contend that the "principal response organizations" include in addition to the above, the City of San Juan Capistrano and the "School District" (presumably the Capistrano Unified School District), but no supporting citation to the record is provided (Int. Proposed Finding No. 54)

5. We reject the inclusion of the District and the City as principal response organizations. The City relies principally on the emergency response resources of Orange County, while the District relies principally on a combination of the emergency response resources of Orange County and the City of San Clemente. (Murri testimony, p. 69, Tr. 7247; Ferguson, Tr. 8684-85; Swanson, Tr. 8792-93; Nauman, Tr. 10,546)

3. The Totality of the Response Organizations for an Emergency at San Onofre.

6. Potentially, many organizations could be involved in a response to a radiological emergency at San Onofre. Since the identification of these organizations is not a matter in controversy and because of the clear and accurate fashion in which these organizations were identified in the Applicants' Proposed Findings, the Board adopts Applicants' Findings Nos. 101-106 as its own. To show the depth of response availability, we repeat those findings in the following six paragraphs.

7. "Numerous public and private organizations are potentially involved in responding to a radiological emergency involving SONGS 2 & 3, depending on the severity of the emergency involved." (App. Ex. #51, Section 5; Ray, Tr. 7129-56; Murri, Tr. 7246-49)

8. "At the federal level, the NRC and FEMA have the primary roles in planning and coordinating the Federal response to a commercial nuclear power plant accident. The Department of Energy has a major technical support function in the area of offsite radiological monitoring and dose assessment. Other federal agencies with a potential role to play include the Departments of Agriculture, Commerce, Defense, Health and Human Services, and Transportation, the Environmental Protection Agency, and the National Communications System." (See *National Radiological Emergency Preparedness/Response Plan for Commercial Nuclear Power Plant Accidents (Master Plan)*, 45 Fed. Reg. 84910 *et seq.*, December 23, 1980)

9. "At the State level, the State OES has the primary role of coordinating the State of California response to a commercial nuclear power plant accident. In this regard, the State OES has assigned the 'lead role' for planning and responding in the event of a radiological emergency to the involved local jurisdictions." (App. Ex. #52, Sections IV.C, V.C, Int. Ex. #23, Sections III.A and B., IV.C, V.; Kearns, Tr. 10,169-70, 10,176)

10. "State OES has assigned the various support responsibilities to the appropriate State agencies, and will take the lead in requesting Federal assistance in the event the emergency exceeds the capabilities of local and State government. Major technical support in the area of offsite radiological monitoring and assessment for both the Plume and the Ingestion EPZ has been assigned to the State Department of Health Services." (App. Ex. #52, Sections V.B.2.b., VI.C.2. and D.; Int. Ex. #23, Sections IV.B.2.b., V.C.2. and D.; Kearns, Tr. 10,177)

11. "At the local level, numerous Federal, State and municipal agencies have plans and procedures to respond to an emergency condition at SONGS. These agencies include the United States Marine Corps - Camp Pendleton, the U.S. Coast Guard (San Diego), the State Department of Transportation, District 7, the California Highway Patrol, Border Division, the Pendleton Coast Office of the State Department of Parks and Recreation, San Diego and Orange Counties, the Cities of San Juan Capistrano and San Clemente, and the Capistrano Unified School District." (App. Exs. #53-58, #139, #140; Turner, Tr. 8901-02; Hunt, Tr. 9261; Coleman, Tr. 8573; Ferguson, Tr. 8692-93; Stowe, Tr. 8489; Wallace, Tr. 9321; Swanson, Tr. 8799-802; Roper, Tr. 8332-33; Killingsworth, Tr. 8267-68)

12. "In addition, a number of private organizations have plans, procedures, or other arrangements to respond to an emergency condition at SONGS. In particular, SCE has a well-developed onsite and offsite response organization capable of providing extensive onsite and offsite emergency response activities. Other private response organizations with procedures and other arrangements to assist SCE or other offsite response organizations in emergency activities are the Red Cross (Orange County Chapter); Tri-City, South Coast and San Clemente General hospitals; Scudder and Superior Ambulance Services; Pacific Gas & Electric Company, Sacramento Municipal Utility District, Environmental Analysis Laboratories, General Atomics Corporation, Bechtel Power Corporation, Combustion Engineering, and the Institute for Nuclear Power Operations." (App. Exs. #51, Appendix A, #95, #96, #97, #101; Nash, Tr. 8422-23; Ray, Tr. 7136-38, 7837-40; Linnemann, Tr. 7108)

4. The Capability of the Response Organizations.

13. The Board received substantial documentary evidence and heard numerous witnesses concerning the capability of the principal and supporting emergency response organizations to respond initially, and to augment this response on a continuous basis. Except as noted below with respect to San Juan Capistrano and the State Parks, this evidence is not controverted. Accordingly, we will summarize very briefly the resources and capabilities of the response organization.

14. The Applicant Southern California Edison Co. is perhaps the most important response organization. The company's personnel at San Onofre have been organized to cover the essential functions in responding to an emergency. (App. Ex. #51, § 5; Ray, Tr. 7130)

15. Levels of emergency response staffing will be adequate and additional personnel can be called in from offsite at any time, within 60 minutes. (Staff Ex. #12, p. 13-1; Ray, Tr. 7131; 7845-47)

16. The Company's program for maintaining its emergency capability includes training, periodic drills, maintenance, inventory of emergency equipment and an annual plan review. (App. Exs. #51, #58; Willis, Tr. 7025-32; Linnemann, Tr. 7104)

17. Each of the principal offsite response organizations has an emergency plan that describes its capability to respond to an emergency. Each of these principal organizations has equipment and personnel, as well as access to additional equipment and personnel from the larger jurisdiction of which they are a part or with which they have mutual aid agreements. (App. Exs. #53, #54, § 4; Murri, Tr. 7202, 7248-49, 7907-11; Hunt, Tr. 9259, 9266-67; Turner, Tr. 8912, 8923-24; Stowe, Tr. 8490-91, 8501-03; Wallace, Tr. 9318, 9332; Coleman, Tr. 8584, 8588; Nauman, written testimony, August 24, 1981, p. 10, Tr. 10,372, 10,928-29)

18. The most important supporting offsite response organizations have existing procedures and ample resources to assist in any emergency at San Onofre. This is true, for example, of the California Highway Patrol, CALTRANS, the Red Cross and the State of California. All of these organizations function on a 24-hour per day basis and respond regularly to emergency conditions, which tends to ensure an ongoing preparedness capability. The existence and capabilities of these organizations bolster the capabilities of the principal response organizations. (Killingsworth, Tr. 8270-72; Roper, Tr. 8336, 8360-62; Nash, Tr. 8425, 8430, 8436; Kearns, Tr. 10,170, 10,177; Reed, Tr. 10,285)

19. The Intervenors do not dispute the response and augmentation capabilities of response organizations, except for questions they seek to raise about San Juan Capistrano and the State Parks. They point to certain staffing deficiencies cited in preliminary evaluations by the State

OES and FEMA, Region 9. These criticisms, when read in context, are insignificant.

20. First, the State OES merely notes in its review, without any elaboration and among many other matters, that 24-hour response capability was "not addressed" in the San Juan Capistrano Plan. (Int. Ex. #19, p. 3) Particularly since San Juan Capistrano is not a primary response organization, a failure to address this subject explicitly in its plan is not important.

21. Second, the FEMA Region 9 evaluation stated that in the May 13 exercise in San Juan Capistrano, the "assigned emergency staff accomplished emergency tasks with a minimum of problem." This evaluation noted, however, that "no provision was made for relief crews." It went on to recommend that key relief personnel be assigned and trained. This could hardly be considered a critical point. (Int. Ex. #14, p. II-23)

22. Finally, the FEMA evaluation noted a "chronic problem of understaffing" at the Pendleton beaches because of turnover, a problem that could offset ability to perform radiological monitoring and other tasks as well. However, this FEMA evaluation concluded that "Parks and Beaches overall capacity to execute its emergency response plan to protect the general public was generally demonstrated to be good." (Int. Ex. #14, p. II-35) The Intervenor's fault the Applicants' "Action Plan" (App. Ex. #144) because it does not address these matters. We find no fault in this because the "Action Plan" was intended to focus only on the most significant problems raised in the FEMA June 3 Interim Findings.

23. The Intervenor's Proposed Findings of Fact Nos. 61-66 focus on coordination between response organizations. Coordination is an important part of emergency planning involving multiple response organizations. For example, Contention 2I, which is now uncontested, is directly concerned with coordination. The Interagency Agreement and Evacuation Procedure (App. Ex. #59) evidences a recognition of the need for coordination among San Onofre response organizations. However, coordination is not an element of Contention 2F, which is concerned with the adequacy of resources of response organizations, particularly staff resources. Accordingly, we are not addressing these proposed findings, except insofar as related matters may be addressed under other contentions.

5. The NRC and FEMA Staff Assessments.

24. The regulation (10 CFR 50.47(a)(2)) explicitly charges the Staff with assessing whether the Applicants' onsite emergency plans are adequate. The Staff's witness testified that the Applicants' personnel were adequate for initial response and for augmentation of initial response. The Staff concluded that the Applicants' capability to respond to an emergency

and to augment that initial response on a continuous basis meets the standard of 10 CFR 50.47(b)(1). (Sears testimony, August 6, 1981, p. 8-9, Tr. 10,742)

25. The FEMA witness testified that he had examined the capability of the principal offsite response organizations to respond to an emergency and to augment the initial response on a continuous basis. He concluded that those organizations met the planning standards of 10 CFR 50.47(b)(1). (Nauman testimony, August 24, 1981, p. 10; Tr. 10,929)

6. Board Conclusions.

26. On the basis of the foregoing findings, the Board concludes there is reasonable assurance that the capability of each principal response organization to respond and to augment this initial response on a continuous basis meets the planning standards of 10 CFR 50.47(b)(1).

I. Training for an Emergency Response.

1. **Training of Onsite Personnel.** There is substantial and uncontroverted evidence in the record demonstrating the adequacy of the Applicants' training of its onsite personnel. The Intervenor's proposed findings critical of training (IF 112-119) are directed exclusively toward training of offsite personnel. Our description of the training of onsite personnel is brief and is drawn largely from the Applicants' proposed and now uncontested findings.

2. Personnel responsible for the direction and coordination of emergency response actions at San Onofre have had specific training with respect to the plant emergency plan, including its implementing procedures. Training includes familiarization with equipment and procedures for communications between the various organizations involved in an emergency response. Personnel involved in assessment of possible accidents have had extensive nuclear power plant experience and training. Emergency teams, such as monitoring teams and sampling teams, have specific instruction on procedures required to execute their assignments. Elements of the training program are set forth in a training memorandum. (App. Exs. #62-65; Willis, Tr. 6984-85, 7030) (AF 268-269)

3. Training includes lectures and drills in which each individual must demonstrate ability to perform his assigned emergency function. During the practical drills, on-the-spot correction of erroneous performance is made and proper performance is demonstrated by the instructor. (Willis, Tr. 7030-31) (AF 272)

4. Although personnel turnover exists within the onsite emergency response organization, turnover should not affect the training level of emergency personnel. Under the Applicants' program, they intend to have

trained back-up teams ready to take over at any time. Statistics on turnover and seniority of the Applicants' personnel also indicate that turnover will not be a factor. (Willis, Tr. 6980-81, 6984-85; Statement of Counsel, Tr. 11,359-60 and accompanying chart)

5. "Initial training in support of the SONGS 2 & 3 Emergency Plan is in progress and will be completed prior to fuel load for Unit 2. At that time, the first designated teams which will staff Unit 2 will have received all of the initial training identified in Enclosure 1 of the training Memorandum in accordance with the curricula outlines. Additional teams will receive this initial training on an on-going basis to assure the availability of sufficient trained personnel at all times." (App. Ex. #62; Willis, Tr. 6984-85, 7030) (AF 272)

6. The NRC Staff reviewed the Applicants' onsite training of emergency personnel. The Staff concluded that that training satisfies the criteria of NUREG-0654, the Staff's implementation criteria for planning standard 10 CFR 50.47(b)(15).

2. Training of Offsite Personnel.

7. The record developed on training of offsite personnel was less comprehensive than the record of onsite training. For example, the Orange County Response Plan calls for training of all key personnel. (App. Ex. #53, V-44-47) But the Plan does not provide any details about training and whether, in fact, training plans have been carried out. The testimony of some local officials filled in some of these gaps. For example, the head of emergency planning in Orange County stated his opinion that their personnel were adequately trained for radiation monitoring as soon as they received equipment then on order. Other officials testified that they planned to have their personnel participate in training programs to be given by the Applicants, programs which we now describe. (Turner, Tr. 8920, 8923-24; Fox, Tr. 9028; Coleman, Tr. 8605-06) (Other offsite training initiatives are reflected in testimony by Hunt, Tr. 9275; Wallace, Tr. 9318; Nash, Tr. 8427; Stowe, Tr. 8549-50; Swanson, Tr. 8807-08; Ferguson, Tr. 8692)

8. An Applicant witness, Mr. Ernest Murri of NUS Corp., testified that his review of training for offsite personnel indicated they generally are trained to respond to large-scale disasters, but that additional training in the unique characteristics of a radiological emergency would be desirable. Consequently, at Applicants' request, NUS has developed and made available to all offsite emergency response personnel the radiological emergency response training program described in Applicants' Exhibit #111. A number of individuals, including the directors or coordinators of response organizations, personnel responsible for accident assessment, radiological

monitoring teams and radiological analysis personnel, police, security and fire fighting personnel, first-aid and rescue personnel and local support services personnel, will be provided an opportunity for training and periodic retraining in their expected roles in an emergency response. These are the categories of people for whom training is recommended in NUREG-0654, O 4. (Murri testimony, pp. 75-76) (SF 256)

9. Another Applicant witness, Dr. Roger Linnemann, also addressed training of offsite personnel. Dr. Linnemann was requested by the Applicants to conduct a training program for offsite personnel from various agencies and firms located in Orange and San Diego Counties who might be called upon to assist in an emergency response to an accident at San Onofre. Dr. Linnemann detailed the specific agencies and the number of individuals who were provided with training and the time frames involved. The emphasis in this program was on medical aspects of radiation accidents. However, objectives were tailored for each specific audience ranging from physicians and emergency room personnel to security and communication personnel. Provisions have been made for this type of training to be continued for those who have not received the training and for retraining for those who have received it. (App. Ex. 88-92; Linnemann, Tr. 7091-02) (SF 254)

10. Dr. Linnemann's training program provided "an understanding of ionizing radiation, including the biological effects and medical significance of radiation exposure; provided each attendee with the medical basis for decision-making in the event of an offsite release of radiation; explained the basic protective actions which can be taken to reduce exposure levels in the event of an accident; provided specific training concerning notification and response requirements; reviewed the various responsibilities of physicians and hospital personnel, emergency response managers, and general emergency response personnel; and provided situational exercises for reinforcement of each participant's understanding of the coordination required for response to various types of nuclear power plant emergencies." (Linnemann, Tr. 7093-98) (AF 280)

11. The FEMA assessments of training of offsite personnel were generally critical. The Interim Findings of June 3, 1981, had this to say (at pp. 6-7):

Radiological emergency response training has essentially not been provided to those who may be called upon to assist in an emergency. The Utility has not initiated any identifiable training program to cover areas of radiological monitoring dose assessment, or general radiological training so as to offer a wide selection of courses to meet current requirements. The exception has been a radiological Monitoring Course offered for medical training though

its availability was not well advertised or coordinated. This issue is of major concern and without its immediate resolution offers a significant impedence to the total response capability. In conjunction with the State of California OES, the Utility should immediately take action to develop the necessary training to meet the identified needs in the local jurisdictions.

12. At the hearing, Mr. Nauman of FEMA said in prepared testimony, in part, that (Aug. 24 testimony, p. 11):

Training provided to response personnel has been limited. . . . Additional training is felt necessary to improve proficiency and expand on the specific techniques of power plant field monitoring and ingestion pathway sampling, as well as the provision of basic radiation concepts training to all participants. Training plans and procedures are being developed at this time as a result of the exercise evaluation findings.

Cross-examination of Mr. Nauman underlined that training specifically for radiation monitoring was a primary concern. (Tr. 10,451, 10,458) It was also brought out that efforts were then ongoing to improve training of offsite personnel (Tr. 10,930) Mr. Nauman reiterated his view, however, that the adequacy of offsite training had not yet been demonstrated. (Tr. 10,932)

13. The FEMA Updated Evaluation of November 1981 reflected some apparent improvement in training of offsite personnel, with some things yet to be done. The Update stated (at p. 3):

Training is being conducted and local jurisdiction personnel have attended courses. However, training program information submitted was confusing and unclear regarding courses, length of course, schedules, etc. Further program clarification is requested for assessment. No drills have been conducted to date.

3. Board Conclusions.

14. The Applicants' training of emergency response personnel onsite is fully adequate and meets the planning standard of 10 CFR 50.47(b)(15), subject to confirmation by the Staff that initial training in support of the San Onofre, Units 2 and 3, Emergency Plans has been completed.

15. The record reflects that the Applicants are pursuing an active program to assist offsite response organizations in training emergency personnel. The program includes those matters and categories of personnel set forth in NUREG-0654, O 4. The record evidences an attitude of responsible cooperation between the Applicants and the offsite organizations with respect to training. The Applicants expect to complete the NUS

initial training program (§ 9, above) of offsite personnel before Unit 2 is ready for full power operation.

16. One of the most significant concerns reflected in the record concerns training for radiological assessment and monitoring. (See §§ 12 and 13, above) This subject is addressed directly in Part D of these findings, where we find that the Applicants are capable of carrying out all offsite assessment and monitoring functions needed in any emergency in the plume EPZ. While assessment and monitoring training for offsite personnel should be pursued, as appropriate, our finding on the Applicants' comprehensive capabilities in this area means that any present deficiencies in offsite training are not an impediment to licensing.

17. The record as a whole indicates that training of offsite emergency personnel probably is in substantial compliance with 10 CFR 50.47(b)(15). Specifically, appropriate training programs are in place and are being attended. Offsite training as a whole has been evolving toward satisfactory levels. But the present record does not support an unequivocal finding that training of sufficient numbers and categories of offsite emergency personnel has been completed.

18. By the time of the November update, FEMA's concerns were focusing on specific, readily confirmable, and relatively minor matters, such as the existence of adequate lesson plans and course schedules.

19. In conclusion, the Board finds that the training of offsite emergency response personnel substantially complies with 10 CFR 50.47(b)(15), provided that the NRC Staff confirms prior to full power operation that:

a. The FEMA concerns expressed in the November Update Evaluation about lesson plans and schedules have been satisfied.

b. Initial training of adequate numbers of offsite personnel in each category listed in NUREG-0654, O 4 has been completed (except for § 4c personnel).

J. General Plans for Reentry and Recovery.

1. This contention addresses that time after an evacuation at which plant conditions have been controlled and the emergency condition no longer exists. The NRC regulation requires that *general* plans for recovery and reentry be developed (10 CFR 50.47(b)(13). (Emphasis added.)

2. Intervenors state their position on this issue briefly, and we quote it: "A review of local jurisdiction plans of Orange County, San Diego County, San Clemente, San Juan Capistrano and the State Parks indicates that none of these plans contain sufficient material to meet . . ." the planning standard of NUREG-0654. "The Applicants have offered no evidence that such plans exist. Applicants' position is that *ad hoc* planning is all that is required." (IF 149)

3. NUREG-0654, Planning Standard M, criterion 1, provides that:

Each organization, as appropriate, shall develop general plans and procedures for reentry and recovery and describe the means by which decisions to relax protective measures (e.g., allow reentry into an evacuated area) are reached. This process should consider both existing and potential conditions.

4. The Intervenor do not challenge the adequacy of the Applicants' onsite plans for reentry and recovery, set forth in Section 9 of that Plan. Criteria have been established for declaring that the emergency is under control and in the recovery phase. In addition, the Applicants' plan includes not only onsite but also offsite activity important to the offsite public and response organizations. We adopt in the following four paragraphs the Staff's and Applicants' findings, as indicated, as an accurate and helpful description of the Applicants' plans.

5. "The object of the onsite recovery effort is to make repairs, to take positive steps to prevent recurrence of the same or related accidents, and to return the facility to a safe condition for renewed operations." (App. Ex. #51, Sec. 9; Pilmer, Tr. 7390) (AF 391)

6. "An onsite recovery organization will be formed by Applicants with resources provided as best fits the nature of the recovery operation required. Applicants' resources for staffing the recovery organization will be augmented, as necessary, by resources from throughout the industry, such as other utilities, suppliers, consultants, and engineering firms. The recovery operation is based on the organizational structure recommended by the Atomic Industrial Forum." (Pilmer, Tr. 7390; App. Ex. #51; Murri, Tr. 7242) (AF 392-394)

7. "The Emergency Coordinator is responsible for notification to all offsite authorities that the emergency has shifted to a recovery phase. Planned radiation exposure limits for urgent reentry shall be in accordance with National Council on Radiation Protection (NCRP) criteria and, in any lesser situation, the criteria of 10 CFR Part 20 apply. Analyses will be performed to estimate population exposure from all applicable exposure pathways. The general structure of a long-term recovery organization is described in the Emergency Plan." (Sears testimony, August 20, 1981, p. 13-14) (SF 297)

8. "... The offsite recovery organization will be formed by Southern California Edison, local, State and federal agencies. The recovery organization will operate out of the EOF. The first function of the recovery organization is to determine which land areas are contaminated. Those areas will then be decontaminated." (Pilmer testimony, pp. 36-38) (SF 300)

9. State and local officials testified concerning the offsite plans for reentry and recovery. Mr. Turner of Orange County, the most important offsite response organization, testified that their plan delineates responsibilities in this area and that, in his judgment, this area was a non-critical item at this point. Mr. Turner believed that reentry and recovery programs should be conducted on an *ad hoc* basis due to the inability to pre-plan and anticipate the types of situations that could be encountered. (Turner, Tr. 8921-22)

10. Chief Coleman of San Clemente testified that according to their plan, recovery and reentry are the primary responsibility of the county and the State; therefore the city plan does not address recovery and reentry. (Coleman, Tr. 8608-09)

11. Col. Wallace of the Marine Corps viewed the event of reentry, including dependents, a non-problem for the Corps; it is an exercise that is carried out routinely as part of their normal activities. Once the order is given, "moving back in is just retracing the same steps that we came out with, and it is not that big a problem to us." (Wallace, Tr. 9339) In response to a question, Col. Wallace testified that they "would rely on [the advice of others who may examine the area], but we also have the capability with our monitoring teams to double-check the recommendations of folks, and of course, we would recommend to the Commanding General that we take the advice of Southern California Edison, the Nuclear Regulatory Commission, or our own monitor survey team, of our own assessment." On the basis of this advice, the Commanding General would decide whether to move back into evacuated areas. (Wallace, Tr. 9340)

12. Mr. Kearns of the State OES considers this issue basically "a combined local, state and federal problem. The state health and safety code designates the California Department of Health Services radiologic health section as the agency to set standards regarding reentry. Once they have established these standards, they will then assess the monitoring that is done and work with the locals and all other parties regarding decontamination to reach those levels." (Kearns, Tr. 10,188)

13. The offsite plans generally do not discuss recovery and reentry in any detail (*see* App. Ex. #54, San Diego County Plan, Part XVI), and some do not address it at all. Arguably, the offsite plans do not meet the level of detail apparently contemplated by NUREG-0654, MI, quoted in ¶ 3, above. We emphasize, however, that the standard in the regulation itself, the governing legal standard, requires only "general" plans. Moreover, lead responsibilities in this area would be taken by the Applicants and federal and State agencies. (*See* App. Ex. #53, Orange County Plan, III-3) Therefore, time would not be of the essence for reentry by a local offsite agency. Furthermore, in the nature of things, the local offsite

organizational structure would be the same or similar to the structure that was in place for the evacuation, largely obviating any detailed organizational pre-planning.

14. Mr. Nauman of FEMA testified, without elaboration, that the planning performed by local jurisdictions generally meets the requirements of § 50.47(b)(13) in regard to reentry and recovery. (Nauman, Tr. 10,375) He expressed the view that only a small amount of advance planning can be done in this area. (Tr. 10,505) Mr. Nauman further testified that he considers the reentry recovery plans "minimally adequate in light of the fact that they generally address that some planning will be accomplished at a further time." (Nauman, Tr. 10,942) (SF 299) FEMA's November Update Evaluation (S. Ex. #14) makes no specific mention of recovery and reentry.

15. On the basis of the foregoing findings and evidence, we find that the Applicants' general plans for both onsite and offsite activities related to reentry and recovery are adequate and meet the planning standard of 10 CFR 50.47(b)(13). On the same basis, we find that the general plans of the offsite agencies are minimally adequate and minimally meet the planning standard of 10 CFR 50.47(b)(13). Our findings in those regards rest in part on our view that the rather sketchy nature of the offsite response organization plans does not raise a significant health or safety question about recovery and reentry. The principal concern in that setting is decontamination, and that would be handled primarily by the Applicants and federal and State agencies. We think we can assume that any area having a possibly dangerous level of contamination would be cordoned off, and reentry by the public would be effectively prevented, until decontamination was complete. Again, time would not be of the essence. Therefore, any gaps in offsite response organization planning for reentry and recovery should only result in inconvenience and delay, regrettable results, but not results that would affect public health or safety.

K. Adequacy of Offsite Emergency Operations Centers, Transportation and Communication Equipment.

1. Contention 2E raises issues concerning the adequacy of "transportation and communication equipment, and the operation of the emergency operations centers of the principal response organizations" within the meaning of 10 CFR 50.47(b)(8). These issues are uncontested; the Intervenor did not propose any findings or conclusions. The NRC Staff supports the Applicants. Therefore our findings are brief and general.

2. The Applicants plan to activate and operate offsite emergency operations centers in the event of a radiological emergency: the Emergency Operations Center ("EOC") and the Emergency Media Center

("EMC"); both are located in San Clemente. The EOC would be a central point where all involved emergency response organizations could assess conditions and coordinate their activities. The EMC would expedite and coordinate the dissemination of information through the media. The Applicants' ability to operate an Interim EOC and the EMC was demonstrated at the May 13 exercise. The "Interim" EOC and related developments are described in ¶¶ K.1-8 below. (App. Exs. #110, #122A, #147; Pilmer, Tr. 7377-78; Cramer, Tr. 7054-57; Murri, Tr. 7252)

3. The Applicants have multiple and redundant communications equipment enabling them to maintain contact with emergency response personnel and involved federal, State and local officials. These systems include an onsite intercom and public address system, a UHF radio to facility personnel, a regular public telephone system, a dedicated telephone system, two additional dedicated ring-down circuits to the EOF, a dedicated telephone to the NRC, Region V, a VHF radio system to the USMC, a UHF radio system to State Parks, and a dedicated microwave multiplex system to the Applicants' Control Centers. (App. Exs. #51, Section 7.5, 136; Ray, Tr. 7147-48; Pilmer, Tr. 7372-74)

4. Should normal access to San Onofre become restricted, the Applicants can transport personnel and equipment there by helicopter. The Applicants maintain a fleet of aircraft, including five helicopters. The Applicants own a large fleet of ground vehicles, including heavy-duty trucks and four-wheel drive vehicles that would be available to San Onofre, if necessary. (App. Ex. #51, Section 6.0; Sears, written testimony, pp. 9-10, Tr. 10,644)

5. Each of the principal offsite emergency response organizations operates an EOC from which it can manage and deploy its emergency response equipment and personnel and coordinate its activities with other affected jurisdictions. In addition, EOCs are maintained by San Juan Capistrano, the District and State OES, the California Highway Patrol and Department of Transportation. (Murri, Tr. 9249-50; Turner, Tr. 8911; Hunt, Tr. 9271-72; Coleman, Tr. 8592; Ferguson, Tr. 8721-22; Wallace, Tr. 9329; Stowe, Tr. 8501; Killingsworth, Tr. 8270, 8281; Roper, Tr. 8332; Swanson, Tr. 8807)

6. The EOCs of the offsite response organizations are manned by trained personnel and have reliable communications systems. The readiness of these EOCs is ensured by a program of periodic drills, including activation. Such readiness was demonstrated in the May 13 exercise. (Murri, Tr. 7250-52; Turner, Tr. 8911; Hunt, Tr. 9172-72; Coleman, Tr. 8592-94; Ferguson, Tr. 8691, 8721-22; Wallace, Tr. 9329; Stowe, Tr. 8500-01; Killingsworth, Tr. 8270, 8281; Roper, Tr. 8332; Swanson, Tr. 8807; Reed, Tr. 10,258; App. Exs. #110, #141)

7. Each of the EOCs has multiple communications' capability with all of the other EOCs associated with San Onofre. Backup means of communication exist between the EOCs and San Onofre should primary means of communication be disrupted. (App. Exs. #137, #138; Murri, Tr. 7252; Poorman, Tr. 8754-62, 8764-65, 8771-79, 8783-85, 8788; Stowe, Tr. 8491-92; Killingsworth, Tr. 8267-69; Roper, Tr. 8333, 8371-72; Hunt, Tr. 8268-70; Wallace, Tr. 8329-30; Ferguson, Tr. 8698; Coleman, Tr. 8589-92; Reed, Tr. 10,258)

8. Each of the principal offsite emergency response organizations either has or has access to transportation equipment necessary to respond to an emergency at San Onofre. (Murri, Tr. 7252; Brothers, Tr. 8295-96; Turner, Tr. 8924; Hunt, Tr. 8268; Coleman, Tr. 8588-89; Ferguson, Tr. 8691; Wallace, Tr. 9342; Stowe, Tr. 8501-02; Killingsworth, Tr. 8272, 8283-85; Roper, Tr. 8335-40; Swanson, Tr. 8803-06; Nauman, Tr. 10,928)

9. On the basis of the foregoing, we find reasonable assurance that the offsite emergency operations centers of the principal response organizations are adequate and that those organizations have the necessary transportation and communication equipment to carry out their functions and meet the planning standards of 10 CFR 50.47(b)(8).

L. Emergency Operations Facility.

1. The licensee is required to maintain a "nearsite Emergency Operations Facility" from which to coordinate its emergency response. An exercise was held in May 1981 to examine the state of emergency preparedness for San Onofre. Subsequently, FEMA prepared an analysis of the exercise. These FEMA "Interim Findings" expressed "serious concern" about the licensee's interim Emergency Operations Facility ("EOF"). The concerns included a lack of adequate communications and clear operating procedures, and fragmentation of the facility. (Int. Ex. #15) It is these developments that gave rise to Contention 2I, which placed in controversy the physical design, communications equipment, and operating procedures for the Interim Emergency Operations Facility.

2. The Board received substantial evidence concerning the design, communications and operating procedures of the interim EOF. However, some of this evidence was to be overtaken by events because the Applicants were then in the process of moving the interim EOF to a better location, and this has now been done. In light of this development, the Intervenors now propose a finding that the near-site EOF is not "a significant impediment to the emergency response capability for SONGS." (IF 101) As a result, Contention 2I is no longer a contested issue. In these circumstances, we do not believe it necessary to make detailed findings based on that testimony. We will indicate generally the basis for our

reasonable assurance that the communications equipment and operating procedures for the EOF are adequate, subject to confirmation of certain matters by the Staff.

3. The Applicants provided an extensive, largely redundant, communications system for the interim EOF. That system connects the components of the interim EOF and provides for communication between the interim EOF, the San Onofre nuclear station and the various offsite EOCs. That system is more fully described in ¶ E.2, above. The Board assumes that the same or an improved communications system has been installed in the new EOF location. This can be confirmed by the Staff. (App. Exs. #51, #77, #122A, p. 3, and #142)

4. The Applicants and the local jurisdictions developed operating procedures for the interim EOF. The Board assumes that the same or improved operating procedures have been adopted for the new EOF location. This can also be confirmed by the Staff. (App. Exs. #122A, #152(b), #153(b), #154(b), #155(b); Pilmer, Tr. 7378-79, 9139, 11,103-05)

5. Mr. Nauman of FEMA testified that the interim EOF facilities had been examined for compliance with NUREG-0654 criteria. As a result of the "shortfall from perceived requirements" observed during the May 13, 1981 exercise, the design, equipment and procedures of the interim EOF at the San Clemente City Hall were being reviewed and updated. (Nauman testimony, August 24, 1981, p. 13)

6. Mr. Nauman noted that corrective actions had been taken and were adequate to warrant a favorable finding with respect to this issue, but that a demonstration should be conducted to allow for verification of capabilities. (Nauman, Tr. 10,548-52, 10,936-37)

7. After the hearings had been completed the Board received FEMA's November 1981 "Update Evaluation." Under "Corrective Action Compliance," this document states that:

Emergency Operation Facilities (EOF) procedures and development of an operations facility are satisfactory.

Later in the Evaluation, the following statements appear:

The interim EOF has been relocated to another area of the San Clemente Fire Department facility, increasing working space and separating the function from the San Clemente EOC. Procedures (SOPs) have been established for its operation. Communications systems have been added or modified to improve the general operations of the facility. A drill is recommended to test facility and personnel functions. EOF, ODAC, and Liaison SOPs need review by State and FEMA, and concurrence by all jurisdictions to validate operations and provide the basis for training users. A drill should be scheduled by January 31, 1982, conducted before

April 1, 1982, and evaluated by State and FEMA personnel. Completion should reflect a reasonable assurance of meeting the standard.

8. We agree with FEMA that a drill should be conducted to verify the adequacy of the physical design, communications equipment and operating procedures of the new EOF before full power operation, if such a drill has not already been conducted. In addition, FEMA should review and confirm to the Staff whether the EOF, ODAC and Liaison SOPs are adequate. However, we do not believe it necessary to require State review of SOPs or formal concurrence in the SOPs by all the participating jurisdictions. Subject to the Staff's confirming prior to full-power operation satisfactory completion of an EOC drill and the SOPs just referred to, plus the items referred to in paragraphs 3 and 4, the Board finds that there is reasonable assurance that the emergency response planning and implementation capability as regards the physical design, communications equipment and operating procedures for the Emergency Operations Facility are adequate to meet the planning standards of 10 CFR 50.47(b)(3) and 50.47(b)(8).

M. Monitoring Consequences of a Radiological Emergency in the Ingestion Pathway Emergency Planning Zone.

Contention 2J concerns the adequacy of "the methods, systems and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition within the ingestion pathway EPZ" for San Onofre. This contention became uncontested when the Intervenors did not file proposed findings of fact concerning it. Their submission of a proposed conclusion of law (Conclusion (11), p. 63 of their January 25, 1982 filing), unsupported and unexplained by proposed findings of fact, is not sufficient to retain a contention in contested status. As more fully explained in the discussion section of this decision (Section III C.3, pp. 1209-1211) the Board is making no findings on this contention. Whether the Applicants and the offsite response organizations meet the planning standards applicable to the ingestion pathway EPZ will be determined by the NRC Staff.

V. CONCLUSIONS OF LAW ON EMERGENCY PLANNING ISSUES

Upon consideration of the record of the proceeding and in light of the foregoing findings and discussion, the Board concludes that, with respect to the requirements of the Atomic Energy Act of 1954, as amended, and the

rules of the Commission relating to onsite and offsite planning and emergency preparedness,

A. The Applicants have met their burden of proof and have demonstrated a reasonable assurance on the following contentions:

1. The offsite transient and permanent population within the plume EZP for the San Onofre facility can be evacuated or otherwise adequately protected in the event of a radiological emergency with offsite consequences, as required by 10 CFR 57.47(a)(1), (b)(10) and Part 50, Appendix E.IV. (Contention 1)

2. The procedures for notification by the Applicants of State and local response organizations meet the planning standard of 10 CFR 50.47(b)(5), and the procedures for notification of and continued communications among emergency personnel by all involved organizations meet the planning standard of 10 CFR 50.47(b)(6). (Contention 2A)

3. Each of the principal response organizations has an emergency operations center and the communications and transportation equipment necessary to support its role during an emergency at San Onofre affecting the offsite transient and permanent population, in compliance with 10 CFR 50.47(b)(8). (Contention 2E)

4. The principal offsite emergency response organizations have the capability to respond to emergencies at San Onofre and to augment this initial response on a continuous basis, as required by 10 CFR 50.47(b)(1). (Contention 2F)

5. The general plans of the Applicants and the local response agencies for recovery and reentry following a radiological emergency at San Onofre meet the planning standard of 10 CFR 50.47(b)(13). (Contention 2K)

B. The Applicants did not fully meet their burden of proof with respect to Contention 2H. They did not demonstrate a reasonable assurance that the offsite emergency response organizations possess all of the requisite capabilities for assessing and monitoring offsite consequences of a radiological emergency in the plume EPZ for San Onofre, as required by 10 CFR 50.47(b)(9). However, the Applicants did prove that, subject to their meeting the conditions stated in finding D27 on p. 1252, they themselves possess the capabilities to perform all of the necessary radiological assessing and monitoring in the plume EPZ in the event of an emergency. That showing satisfies the requirement of 10 CFR 50.47(c)(1) that deficiencies

in planning — here, in the capabilities of the offsite organizations to assess and monitor radiation — “are not significant” for San Onofre.⁶⁶

C. The Applicants have met their burden of proof and have demonstrated a reasonable assurance on the following contentions, subject to confirmation by the Staff prior to full power operations (except as noted otherwise) that the matters specified in the findings of fact referred to below have been resolved:

1. The physical and administrative means for prompt emergency notification and the means to provide instruction to the populace within the plume EPZ are adequate and meet the requirements of 10 CFR 50.47(b)(5). (Contention 2B) Staff confirmation is required concerning siren testing, as stated in finding G10 on pp. 1266-1267.

2. The information and procedures for dissemination of such information to the public within the plume EPZ on a periodic basis is adequate to inform the public on how they will be notified and what their actions should be in the event of an emergency, in compliance with 10 CFR 50.47(b)(7). (Contention 2C) The Staff is to work with the Applicants on the question whether public information should also be presented in Spanish, as stated in finding F32 on p. 1264. Time is not of the essence on this matter; however, it is to be resolved during the first six months of full power operations.

3. The radiological emergency response training being provided to onsite and offsite personnel who may be called upon to assist in an emergency is adequate and meets the requirements of 10 CFR 50.47(b)(15). (Contention 2G) Staff confirmation is required concerning completion of the training matters specified in findings 114, 19 at pp. 1279-1280.

4. Applicants' emergency response planning and implementation capability as regards the physical design, communications equipment, and operating procedures for the Interim EOF meets the requirements of 10 CFR 50.47(b)(3) and (b)(8) and Part 50, Appendix E.IV. (Contention 2I) Staff confirmation is required that a successful drill has been conducted on the EOF, and that FEMA has found the EOF and other SOP's referred to in finding L8 on p. 1287 to be adequate.

⁶⁶ That showing could also be viewed as “adequate interim compensating action,” an alternative ground for allowing licensing to proceed, despite a planning deficiency.

5. The plume emergency pathway Emergency Planning Zone established for San Onofre meets the requirements of 10 CFR 50.47(c)(2), except as described in findings A23-25 on pp. 1226-1228. (Contention 3) Staff confirmation is required that the "extended" EPZ concept has been deleted from the San Onofre onsite and offsite plans and that the plume EPZ boundary has been extended, along with siren coverage, to Dana Point and all of San Juan Capistrano.

D. The Applicants did not meet their burden of proof on Contention 2D concerning arrangements for medical services. The offsite emergency response organizations are required by 10 CFR 50.47(a)(12) to make arrangements for medical services for members of the public in the plume EPZ who may be injured in an accident. Such arrangements were not made. The Applicants' medical arrangements for persons who may be injured onsite would not be an adequate substitute for these offsite deficiencies, nor can such arrangements be left to *ad hoc* improvisation.

For the reasons given at pp. 1197-1200 of this decision, these deficiencies in medical arrangements do not preclude full power operations at this time, provided that they are promptly remedied. Six months is a minimum reasonable time for remedial action to be completed and reviewed by this Board. We are retaining jurisdiction of this question — *i.e.*, the adequacy of medical arrangements by the offsite response organizations — to review the adequacy of the remedial action. Any party may request a hearing on that review.

E. The Applicants did not fully meet their burden of proof on Contention 2J concerning the ingestion pathway EPZ. That contention is now uncontested and therefore this Board need not make any findings on it. The Board will take no further action on this contention, leaving it to the NRC Staff to review and determine.

F. Subject to the qualifications and conditions stated in paragraphs B through D of this Part V, the overall state of onsite and offsite emergency planning and preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency involving San Onofre, Units 2 and 3, as required by 10 CFR 50.47(a)(1).

In light of this Partial Initial Decision and the underlying record, the Board further concludes that, to the extent relevant to the matters in controversy, San Onofre Units 2 and 3 will operate in conformity with the application, the provisions of the Act, and the rules of the Commission; that there is reasonable assurance (i) that the activities authorized by the

operating licenses can be conducted without endangering the health and safety of the public, (ii) that such activities will be conducted in compliance with the rules of the Commission, and (iii) that issuance of the licenses will not be inimical to the health and safety of the public.

VI. ORDER

IT IS HEREBY ORDERED, pursuant to the Atomic Energy Act of 1954 and the Commission's rules, based on the findings and conclusions set forth in this Initial Decision and in the Board's Partial Initial Decision of January 11, 1982, and subject to the conditions set forth in paragraphs B-D of Part V of this Initial Decision, the Director of Nuclear Reactor Regulation is authorized, upon making findings on all other matters specified in 10 CFR 50.57(a), to issue to Applicants Southern California Edison Company, San Diego Gas & Electric Company, City of Anaheim, California, and City of Riverside, California, licenses to authorize full power operation for Units 2 and 3 of the San Onofre Nuclear Generating Station, for a term of not more than forty (40) years, at power levels not to exceed 3390 megawatts thermal, per Unit.

. . .

Review and Effectiveness of Initial Decision. Within ten days after service of this Initial Decision, any party may take an appeal to the Appeal Board by filing exceptions to all or portions of the decision.⁶⁷ 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. However, the requirement of filing exceptions may be waived by the Appeal Board and, of course, that Board may modify the filing deadlines for briefs.

In accordance with 10 CFR 2.764(f)(2), the effectiveness of this Initial Decision is stayed pending effectiveness review by the Commission. Comments from the parties on the effectiveness issue must be *in the Commission's hands* within ten days of this decision. In addition, any party may apply to the Appeal Board for a stay of this Initial Decision pursuant to

⁶⁷ We are retaining jurisdiction over the adequacy of the Applicants' siren warning system as described in note 32 at p. 1205. We intend to decide that question within the next 30 days. With that exception, all issues decided herein, including our decision on the adequacy of offsite medical services, are final and ripe for appellate review.

10 CFR 2.788. See *Duke Power Company* (McGuire Nuclear Station),
ALAB-647, 14 NRC 27 (1981).

**ATOMIC SAFETY AND
LICENSING BOARD**

**James L. Kelley, Chairman
ADMINISTRATIVE JUDGE**

**Dr. Cadet H. Hand, Jr.
ADMINISTRATIVE JUDGE**

**Mrs. Elizabeth B. Johnson
ADMINISTRATIVE JUDGE**

Dated at Bethesda, Maryland,
this 14th day of May, 1982.

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)

May 25, 1982

ORDER

(Making Clarifying Change in Initial Decision)

The Board's Initial Decision of May 14, 1982 (LBP-82-39, 15 NRC 1163) included as a condition of full power licenses extension of siren coverage to the "extended" EPZ, including Dana Point and all of San Juan Capistrano. This condition was inadvertently drafted in such a way as to require completion of the additional siren coverage before full power operations could commence. That was not the Board's intention. There probably will be a need for several months' time to acquire, install and test the additional sirens. Moreover, we have found that "alternative means exist to provide a prompt alert to the public concerning an emergency." (FF G 11, *id.* 1266-1267) In recognition of these circumstances, we intended to allow six months to meet this condition, just as for similar reasons we allowed six months to remedy deficiencies in the offsite arrangements for medical services.

Accordingly, paragraph V C 5 of the Initial Decision, *id.* at 1290, is amended by striking out the phrase", along with siren coverage," and adding the following sentence:

Because of the time probably required to extend siren coverage to that area and because adequate alternate means of public notification of an emergency exist for the interim period, such siren coverage can be completed during the first six months of full power operations.

THE ATOMIC SAFETY AND
LICENSING BOARD

James L. Kelley, Chairman
ADMINISTRATIVE JUDGE

Dr. Cadet H. Hand, Jr.
ADMINISTRATIVE JUDGE

Mrs. Elizabeth B. Johnson
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland,
this 25th day of May, 1982.*

* This matter was brought to our attention by the Applicants' comments of May 21, 1982, to the Commission on the Initial Decision. We are issuing this clarifying order on our own motion.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Lawrence Brenner, Chairman
James H. Carpenter
Peter A. Morris

In the Matter of

Docket No. 50-322-CPA

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

May 14, 1982

Ruling on proposed contentions in a construction permit extension proceeding, the Licensing Board determines that the Shoreham Opponents Coalition has failed to raise one contention litigable in such a proceeding and therefore denies that group's request for hearing.

**CONSTRUCTION PERMITS: EXTENSION OF COMPLETION
DATE; GOOD CAUSE**

Pursuant to Section 185 of the Atomic Energy Act, 42 U.S.C. §2235, and 10 CFR §50.55(b) of the Commission's regulations, should construction of a nuclear facility not be completed by the date prescribed in the construction permit, the construction permit shall expire, and all rights thereunder be forfeited, unless the Commission extends the completion date for good cause shown.

**CONSTRUCTION PERMITS: EXTENSION OF COMPLETION
DATE; SCOPE OF PROCEEDING**

To be litigable within the context of a construction permit extension proceeding, a licensing board must find that an issue both: (1) arose from the reasons assigned by the applicant in justification of its request for a construction permit extension or evolve naturally from the extension; and

(2) could not appropriately abide the event of the operating license hearing. *Northern Indiana Public Service Co.* (Bailly Generating Station, Nuclear 1), ALAB-619, 12 NRC 558 (1980).

CONSTRUCTION PERMITS: EXTENSION OF COMPLETION DATE; SCOPE OF PROCEEDING

Issues which neither arise from the reasons assigned by the applicant in justification of its request for a construction permit extension nor evolve naturally from the extension may not be litigated in a construction permit extension proceeding. The exclusive remedy available in such a situation is to file a request for the issuance of a show cause order, pursuant to 10 CFR §2.202, seeking to modify, suspend or revoke a license, or for other appropriate relief, pursuant to 10 CFR §2.206. The fact that a party has already exhausted its 10 CFR §2.206 remedy does not provide a basis for that party to claim that its concerns must be litigated in the context of a construction permit extension proceeding if they would not have been otherwise litigable in such a proceeding under the standards enunciated in *Northern Indiana Public Service Co.* (Bailly Generating Station, Nuclear 1), ALAB-619, 12 NRC 558 (1980).

FINANCIAL QUALIFICATIONS

Contentions related to financial qualification are no longer litigable in NRC licensing proceedings. The Commission has eliminated all requirements for financial qualifications review and findings for electric utilities that are applying for construction permits or operating licenses for production or utilization facilities. *See* 47 Fed. Reg. 13750 (March 31, 1982).

MEMORANDUM AND ORDER RULING ON SOC'S CONSTRUCTION PERMIT EXTENSION CONTENTIONS AND REQUEST FOR HEARING OF SHOREHAM OPPONENTS COALITION

Memorializing a ruling made at a prehearing conference of parties held March 10, 1982 (Tr. 497-501),* the Board denies each of the four

* Pursuant to an Order of the Atomic Safety and Licensing Board Panel dated March 23, 1982 (unpublished), this Board has been reconstituted by the appointment of Dr. Peter A. Morris to replace Mr. Frederick J. Shon. Judge Shon, who joined in the Board's March 10, 1982 ruling, has read this opinion and concurs in the reasoning and the result.

contentions proposed by the Shoreham Opponents Coalition (SOC) as being beyond the scope of matters litigable in a construction permit extension proceeding, and determines that SOC's failure to raise at least one litigable contention requires that its hearing request be denied.

BACKGROUND

On November 26, 1980, the Long Island Lighting Company (LILCO/ Applicant) applied for an extension of construction permit CPRR-55 (CP) for the Shoreham Generating Station, Unit 1.¹ This application requests that the term of its permit, which was initially granted in April 1973² and then extended in May 1979,³ be continued to March 31, 1983.⁴

On December 31, 1980 and January 23, 1981, SOC⁵ requested that the NRC conduct a hearing on LILCO's CP extension application, pursuant to Section 189(a) of the Atomic Energy Act of 1954, as amended.⁶ By the same documents, SOC requested that the Director of Nuclear Reactor Regulation (NRR) institute proceedings, pursuant to 10 CFR §2.206, to suspend or revoke CPRR-55, or to modify that CP by adding certain conditions.⁷

In his decision dated June 26, 1981, the Director of NRR denied SOC's 10 CFR §2.206 petition, concluding that suspension of the construction is

¹ The CP would have expired on December 31, 1980. Pursuant to the Commission's regulations, 10 CFR §2.109, and Section 9(b) of the Administrative Procedure Act, 5 U.S.C. §558(c), LILCO's timely request for an extension continues the life of its existing permit until the application has been finally determined.

² The CP was originally issued by the Atomic Energy Commission. Pursuant to the Energy Reorganization Act of 1974, as amended, 42 U.S.C. §§5801, *et. seq.*, the licensing functions of the AEC were transferred to the NRC effective January 19, 1975.

³ See 44 Fed. Reg. 29545 (1979).

⁴ LILCO's November 26, 1980 application to extend its CP predicted a May 31, 1981 fuel load date. Applicant has subsequently revised its estimate and believes that construction at Shoreham will be completed in September 1982.

⁵ SOC was granted party status in the Shoreham Operating License (OL) proceeding (Docket No. 50-322) pursuant to ASLB Orders dated March 5 and May 1, 1980 (unpublished). The OL proceeding has been ongoing since 1976 (see 41 Fed. Reg. 11367 (1976)) and has recently entered its evidentiary phase.

⁶ 42 U.S.C. §2239(a).

⁷ See SOC's January 23, 1981 filing at 21-30.

SOC apparently commenced lawsuits in both the U.S. Court of Appeals, Second Circuit, and in the U.S. District Court (E.D.N.Y.) on June 17, 1981, alleging that the NRC had both failed to grant SOC a hearing on LILCO's CP extension application and had failed to rule on SOC's 10 CFR §2.206 petition. (See SOC's September 24, 1981 statement of contentions and motion to supplement OL contentions, at 2.) The record before this Board is silent as to the disposition of these suits. Presumably they were discontinued in light of subsequent Commission actions. See *infra*.

not mandated by either law or Commission policy, as SOC's petition did not "give reasons why public health and safety would be threatened imminently if permit suspension were not ordered."⁸

The Director stated that while SOC had set forth a number of matters in its petition which it believed should be considered in a hearing held in connection with LILCO's application for a CP extension, SOC had alleged only that the *operation* of the facility would be unsafe or environmentally unsound, not that the *construction* of the facility itself is improper or inadequate under existing regulatory requirements such that a 10 CFR §2.206 remedy would be appropriate.

Since a permittee pursues work under a construction permit at its own risk, pending approval of the CP extension or of the application for an operating license,⁹ the Director concluded that the institution of proceedings to suspend the permit is not required, because "permitting continued construction of the plant despite unresolved safety questions does not itself pose any danger to the public health and safety."¹⁰ SOC's request for a hearing on the CP extension was thereafter referred by the Director to the Commission.

The Commission, by its unpublished Order of July 22, 1981, determined that SOC's request for a hearing should be granted "subject to the petitioner advancing one litigable contention, and that the Atomic Safety and Licensing Board is to be convened to consider whether SOC's petition raises issues litigable in this construction permit extension proceeding, and, if so to hear and decide those issues." (Citations omitted.)¹¹

On September 24, 1981, SOC filed four proposed contentions which it sought to litigate in this CP extension proceeding. LILCO and the NRC Staff each filed their replies opposing the admission of all SOC's proposed contentions on October 15, 1981.

For the reasons discussed below, we find that none of SOC's contentions should be litigated in a CP extension proceeding.

⁸ DD-81-9, 13 NRC 1125 at 1126 (1981).

⁹ *Id.* at 1127-1128, citing *Power Reactor Development Co. v. International Union of Electrical, Radio and Machine Workers*, 367 U.S. 396 (1961).

¹⁰ 13 NRC at 1128, quoting *Porter County Chapter of the Izaak Walton League, Inc. v. NRC*, 606 F.2d 1363, 1369 (D.C. Cir. 1979).

¹¹ *Id.* at 2.

Based on those filings before it, the Commission concluded that SOC had sufficiently demonstrated that it possessed standing to request a hearing on this matter. *Id.* at 2, n.1.

The Scope of Issues Which May Be Considered in Construction Permit Extension Proceedings

Section 185 of the Atomic Energy Act, 42 U.S.C. §2235, provides, in pertinent part, that should construction of a nuclear facility not be completed by the date prescribed in the CP, "the construction permit shall expire, and all rights thereunder be forfeited, unless *upon good cause shown*, the Commission extends the completion date." (Emphasis added.)

This proviso is implemented in 10 CFR §50.55(b) of the Commission regulations, which states:

If the proposed construction or modification of the facility is not completed by the latest completion date, the permit shall expire and all rights thereunder shall be forfeited: *Provided, however*, That upon good cause shown the Commission will extend the completion date for a reasonable period of time. The Commission will recognize, among other things, developmental problems attributable to the experimental nature of the facility or fire, flood, explosion, strike, sabotage, domestic violence, enemy action, an act of the elements, and other acts beyond the control of the permit holder, as a basis for extending the completion date.

LILCO's November 26, 1980, request for extension of its CP alleges four reasons in support of its need for a CP extension:

1. New Regulatory Requirements
2. Evolving Interpretation of Existing Regulatory Requirements
3. Late Delivery of Equipment
4. Unexpected Difficulties in Completion of Required Plant Modifications

LILCO cites examples of delays alleged to have been encountered because of each one of these factors as justification for its request for a CP extension.

In response to the Commission's July 22, 1981 Order, conditioning SOC's admission to this proceeding upon its advancing at least one litigable contention, SOC filed a petition dated September 24, 1981 setting forth four contentions which, for purposes of brevity, we summarize as follows:

1. **Evaluation of Potential Accidents and Corrective Measures** - Applicant and Staff must evaluate the probability and the consequences of a Class 9 accident occurring at Shoreham, and determine what measures, including design modifications, can be taken to reduce the probability of such accidents or to mitigate their effects.

2. **Liquid Pathway Impacts** - An evaluation of the effects of liquid pathway interdiction (both close to the source and further along population exposure pathways) should be conducted for the Shoreham site. A liquid pathway interdiction system should be implemented for Shoreham.
3. **Siting/Emergency Evacuation** - Operation of a nuclear power plant at the Shoreham site endangers public health and safety because the population density and distribution, the topography, and the configuration of transportation corridors would make prompt evacuation of Eastern Long Island virtually impossible during unfavorable weather conditions.
4. **Financial Qualifications** - LILCO has not demonstrated that it has the financial qualifications to complete the construction of the Shoreham plant.

While SOC did contend in its January 23, 1981 petition to institute proceedings in this matter, at 2, that "good cause to extend the construction permit does not exist," we are unaware of anything in either that petition or in any subsequent SOC filing before this Board which challenges the adequacy of any of the four reasons advanced by LILCO in support of its application for a construction permit extension. Instead, we read SOC's contentions as seeking to have this Board litigate matters other than whether the four reasons stated by LILCO in justification of its failure to complete Shoreham on schedule constitute good cause for the requested extension.

SOC does not appear to dispute this. In its September 24, 1981 statement of contentions, at 3-4, SOC states that in determining what matters are to be considered in an application for a CP extension, an Atomic Safety and Licensing Board is not restricted to an examination of the reasons for delay alleged by an applicant, but must instead look at the "totality of the circumstances" and invoke a "common sense" approach. SOC relies upon the Atomic Safety and Licensing Appeal Board's decision in *Northern Indiana Public Service Co.* (Bailly Generating Station, Nuclear 1), ALAB-619, 12 NRC 558 (1980) as supporting its conclusion that this Board should conduct hearings on its contentions in this CP extension proceeding.

However, in the views of Applicant and Staff, as set forth in their respective filings dated October 15, 1981, SOC has failed to raise at least one contention which would be litigable in a CP extension proceeding. Also, relying on *Bailly, supra*, each of them concludes that the failure of SOC to establish some nexus between its proposed contentions and those reasons for delay alleged by LILCO is fatal to their cause.

Bailly involved an appeal from a Licensing Board's denial of two petitions for intervention which had sought to raise site suitability contentions in a construction permit proceeding for a plant which was, some six and one-half years after the initial issuance of a construction permit, still less than one percent completed.¹² In affirming that Licensing Board's decision, the Appeal Board explained its own decision in *Indiana and Michigan Electric Co.* (Donald C. Cook Nuclear Plant, Units 1 and 2), ALAB-129, 6 AEC 414 (1973), the only previous Appeal Board decision to address the question of the scope of a Licensing Board's inquiry in a proceeding pursuant to Section 185 of the Atomic Energy Act of 1954 and 10 CFR §50.55(b).

As restated in *Bailly*, the holding in the *Cook* decision was that intervenors in a construction permit extension proceeding

... could litigate only those safety or environmental issues which both (1) arose from the reasons assigned in justification of the request for a construction permit extension; and (2) could not, consistent with the protection of the interests of the intervenors or the public interest, "appropriately abide the event of the environmental review - facility operating license hearing." (Citations omitted.)¹³

The Appeal Board noted in *Bailly*, however, that the *Cook* test was tailored to the particular facts of that case, and should not be considered to be "offered as an inflexible mold for passing judgment on the litigability in a permit extension proceeding of every variety of contention in every conceivable setting."¹⁴ Instead, the Appeal Board reaffirmed its statements from *Cook* that a licensing board applying this test must look at the "totality of circumstances" and invoke a "common sense" approach in determining the scope of "good cause" inquiry in the specific case.¹⁵

In light of these considerations, the Appeal Board concluded that it would have great difficulty in finding, based on anything which was stated in *Cook*, that the site suitability issues raised by intervenors in the *Bailly* construction permit extension proceeding should, in the absence of any other vehicle for raising its concerns, abide the operating license proceeding. Since that plant was less than one percent complete, the Appeal Board deemed it to "offend reason" to suggest that these siting contentions should only be explored years hence, following a substantial additional monetary

¹² 12 NRC at 561.

¹³ 12 NRC at 568.

¹⁴ *Id.* at 570.

¹⁵ *Id.*

investment, "if there currently exists substantial cause to believe that the Bailly site is unacceptable."¹⁶

The Appeal Board concluded, however, that a construction permit extension hearing was not the only available proceeding in which the *Bailly* intervenors might advance their concerns; instead, that Appeal Board viewed 10 CFR 2.206, authorizing "any person" to file a request for the institution of a show-cause proceeding under 10 CFR §2.202 "to modify, suspend or revoke a license or for such other action as may be proper," as providing a vehicle whereby concerns such as those raised by the *Bailly* intervenors could be raised at any time.¹⁷

SOC construes the language of the *Bailly* opinion as indicating that the only reason the Appeal Board concluded that those intervenors should not be allowed to raise their siting concerns in that proceeding was because those parties had access to another remedy, *i.e.*, 10 CFR §2.206; having already exhausted that avenue, SOC now seeks to have us consider these matters, which it acknowledges to be unrelated to the reasons advanced by LILCO for a CP extension, stating that no other remedy exists for its concerns.¹⁸

We believe that SOC fundamentally misconstrues the Appeal Board's reasoning in *Bailly*. We do not read *Bailly* as mandating that a licensing board consider issues in a CP extension proceeding having no relationship to those reasons assigned by the applicant in justification of its request for a CP extension or otherwise evolving from the act of extension, solely because the proponent of those issues has already exhausted its 10 CFR §2.206 remedy. Were *Bailly* to stand for that proposition, it would seem that any person having standing to raise any litigable issue could seek a hearing on that issue in a construction permit extension proceeding, regardless of its relationship to those allegations of "good cause" asserted by the applicant, or its relationship to the act of extension, so long as he first raised the matter pursuant to 10 CFR §2.206 and had his petition denied by the Director of NRR.

In our view, the concern expressed in *Bailly* was whether intervenors had *any* vehicle available to them, other than the CP extension proceeding, in which they might raise their concerns about the suitability of the Bailly site, prior to the operating license proceeding.

As we observed, *supra*, *Bailly* was just the second Appeal Board decision to interpret Section 185 of the Atomic Energy Act of 1954 and its

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ See SOC's September 24, 1981 statement of contentions, at 5.

implementing regulations. The Appeal Board noted in both *Bailly* and its predecessor, *Cook*, that because of the dearth of legislative history on point, it considered the scope of a Section 185 "good cause" inquiry to be "entirely *res nova*."¹⁹

We can only speculate whether the Appeal Board would have concluded that the site suitability issues raised by the intervenors with respect to the less than 1 percent complete Bailly plant should be heard in a CP extension proceeding, rather than abiding the operating license proceeding, *if 10 CFR §2.206 did not exist*. In such a procedural vacuum, "common sense" and the "totality of circumstances" might have mandated such a holding.²⁰

In *Bailly*, the Appeal Board expressly stated that "a permit extension proceeding is not convened for the purpose of conducting an open-ended inquiry into the safety and environmental aspects of reactor construction and operation."²¹ To be litigable in such a proceeding, issues must "evolve naturally from the extension which is the source of the proceeding."²² For matters having no "discernible relationship" to any other pending proceeding involving the same facility (*e.g.*, one concerned with permit extension), "the Section 2.206 remedy must be regarded as exclusive."²³

The fact that the Section 2.206 remedy is available in every case, as it was in the one before us, was therefore useful for the *Bailly* Appeal Board to note as the exclusive alternative only where the issues raised could not appropriately be litigated in a CP extension proceeding because they had nothing to do with the reasons assigned for the extension and did not otherwise evolve from the extension. However, as the *Bailly* decision took pains to explain, the Section 2.206 remedy is not exclusive where the issues sought to be litigated could equally be raised in a permit extension proceeding. *Bailly supra*, at 572. Accordingly, as in the *Cook* case, the availability of the Section 2.206 remedy plays no part in a licensing board's analysis of whether the issues are admissible in a permit extension proceeding. The availability (or possible prior exhaustion) of the Section 2.206 remedy has played no part in our decision.

The litigability of SOC's contentions in this proceeding must therefore be determined upon the basis of the Appeal Board's two prong *Cook* test

¹⁹ See *Cook*, 6 AEC at 418-420; *Bailly*, 12 NRC at 567.

²⁰ 12 NRC at 570

²¹ *Id.* at 573.

²² *Id.* This is broader than being related to the reasons assigned by permittees in justification of the extension request. If the scope of an extension proceeding was limited to just the reasons assigned, permittees would be able to unilaterally limit the permissible scope of the proceeding by being selective in their proffered reasons.

²³ 12 NRC at 570.

as amplified in *Bailly*: whether those issues both (1) arose from the reasons assigned in justification of the request for a construction permit extension or evolve naturally from the extension; and (2) could not appropriately abide the event of the operating license hearing.²⁴

SOC's CP Extension Contentions

The Board concludes that all four of SOC's proposed contentions are inappropriate for admission in a CP extension request hearing.

1. **Evaluation of Potential Accidents and Corrective Measures.** In its October 15, 1981 filing, the Staff urges rejection of this contention both because "this issue has no relation to whether the Applicant has 'good cause' to seek extension" and because "any contention that 'Class 9' accidents must be looked at in the CP extension proceeding, where the Final Environmental Impact Statement has been issued is a challenge to the Commission's 'Class 9' policy statement." LILCO takes a similar position.

We agree that this contention is not properly litigated in a Shoreham CP extension hearing for the reason that it does not arise from the good cause reasons set forth in justification of the extension request and neither evolves from nor is exacerbated by the act of extension. Further, if litigable at all under the Commission's Policy Statement,²⁵ it can certainly abide the ongoing operating license hearing. Indeed, safety issues relating to "Class 9" accidents have been raised by SOC in the OL proceeding in its series of four contentions designated 7B(1)-(4). These several OL contentions are better particularized than this broadly stated contention. We have addressed in our ruling on those contentions the extent to which this matter is litigable in the Shoreham OL proceeding. Memorandum and Order Confirming Rulings Made at the Conference of Parties, LBP-82-19, 15 NRC 601 (1982).

2. **Liquid Pathway Impacts** - There is no relationship of this contention to the reasons asserted in LILCO's request for a CP extension, nor is it otherwise affected by the extension.

3. **Siting/Emergency Evacuation** - This contention has no connection with the reasons stated by LILCO's as causing the need for the CP extension, nor is it otherwise affected by the extension. Emergency plan-

²⁴ 12 NRC at 568, 573.

²⁵ "Statement of Interim Policy on Nuclear Power Plant Accident Considerations Under the National Environmental Policy Act of 1969," 45 Fed. Reg. 40101 (1980).

ning issues will be specified and litigated in the operating license proceeding.

4. **Financial Considerations** (related to ability to complete construction) - As set forth in SOC's September 24, 1981 filing before this Board, this contention has no connection with the reasons stated in Applicant's request for a CP extension, nor was it alleged nor did it appear to evolve out of the act of extension.

In the Prehearing Conference held on March 10, 1982, Counsel for SOC noted that at page 15 of its January 23, 1981 request for hearing, SOC had alleged that LILCO's increasing financial problems could affect the quality of the completion of construction and stated his belief that SOC had raised an issue related to LILCO's CP request.²⁶

In ruling upon this contention from the bench, we found that even when viewed in the light most favorable to SOC, it had presented an insufficient basis to determine that there is a nexus between the financial qualifications of LILCO to complete the construction of the facility and the CP extension. We disagreed with LILCO's assertions that this matter would be litigable in the OL proceeding, as that proceeding would examine LILCO's financial qualifications to operate the facility, not to construct it. However, we noted that SOC could at the ongoing OL proceeding raise issues related to defects which it alleges result from LILCO's failure to construct the facility properly. Our reasoning was that at the CP stage, any assessment of the applicant's ability to construct the plant properly was necessarily predictive and indirect, and that assessment of its financial qualifications to construct the plant was part of this direct assessment. However, at the OL stage the much more direct inquiry is whether the facility nearing completion in fact has been constructed properly. This will be an issue, in the context of LILCO's past QA/QC alleged deficiencies in construction, in the OL proceeding.²⁷

Subsequent to that time, the Commission amended its regulations, eliminating all requirements for financial qualifications review and findings for electrical utilities that are applying for construction permits or operating licenses for production or utilization facilities. The Statement of Considerations to these amendments stated that this includes ongoing licensing proceedings.²⁸ Contentions related to financial qualifications are therefore no longer litigable in NRC licensing proceedings, including this one.

²⁶ Tr. at 414-420.

²⁷ Tr. 498-501.

²⁸ 47 Fed. Reg. 13750 (March 31, 1982).

It is therefore

ORDERED that each of SOC's four contentions proposed for consideration in this CP extension proceeding is denied admission; and it is

ORDERED that, pursuant to the Commission's July 22, 1981 Order, SOC's failure to advance one litigable contention in this CP extension proceeding mandates that its January 23, 1981 hearing request be denied.

Pursuant to 10 CFR §2.714a, SOC is advised that this order wholly denying its request for a hearing may be appealed on the question of whether its hearing request should have been granted in whole or in part by the filing of a notice of appeal and supporting brief with the Atomic Safety and Licensing Appeal Board within ten days after service of this order (with the allowance of five additional days for time taken by mailing of this order).²⁹

THE ATOMIC SAFETY AND
LICENSING BOARD

Lawrence Brenner
ADMINISTRATIVE JUDGE

James H. Carpenter
ADMINISTRATIVE JUDGE

Peter A. Morris
ADMINISTRATIVE JUDGE

Bethesda, Maryland
May 14, 1982

²⁹ We are aware, of course, that SOC is currently participating in the OL evidentiary hearing before us. Licensing boards do not have authority to extend the time for appeal. Requests for extension of time in which to appeal, for good cause shown, should be received by the Appeal Board prior to the expiration of the time for appeal. It is the preferred, in some circumstances mandatory, practice for such requests to note the views of the other parties to the extension proceeding.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Peter B. Bloch, Chairman
Jerry R. Kline
Hugh C. Paxton

In the Matter of

Docket Nos. 50-266-OLA
50-301-OLA

**WISCONSIN ELECTRIC POWER
COMPANY**

(Point Beach Nuclear Plant,
Units 1 and 2)

May 26, 1982

This decision resolves intervenor's claim that each of the Westinghouse tube-sleeving tests that were filed in this proceeding should be released to the public, despite a claim by Westinghouse that these tests are proprietary. The Board determined that the tests, which were part of the basis for its decision to license a tube-sleeving demonstration program, are proprietary; however, §2.790(b)(5) requires that proprietary information be released to the public if the Board considers the public interest in learning the basis for Commission decisions to be more important than the "demonstrated concern for protection of a competitive position."

Application of the required balancing test causes the Board to release to the public only a few of the Westinghouse tests. Tests (and test results) that have been performed by Westinghouse's competitors and that do not reveal the nature of the underlying proprietary sleeving process, should be released. Tests that are not performed by Westinghouse's competitors should not be released because release would reveal the dimensions of the Westinghouse testing program. Tests from which inferences can be drawn about the nature of the sleeving process also should not be released because of Westinghouse's interest in preserving the proprietary nature of its sleeving process.

The Board also rules that the balance required to be struck under §2.790(b)(5) may shift with time and that its decision should not prevent the release of these documents in response to a Freedom of Information Act (FOIA) Request filed two years from the date of issuance of its decision. It rules that such an FOIA request should be decided by application of the balancing test in §2.790(b)(5), as interpreted in this decision.

RULES OF PRACTICE: PROPRIETARY INFORMATION

10 CFR §2.790 requires that proprietary information should be released to the public if the public interest in being informed is found to be more important than "the demonstrated concern for protection of a competitive position."

RULES OF PRACTICE: PROPRIETARY INFORMATION

The Board may review whether or not it is appropriate to withhold from the public information contained in its record and claimed to be proprietary. The information may be released pursuant to 10 CFR §2.790.

RULES OF PRACTICE: PROPRIETARY INFORMATION

Section 2.790(b)(5), which provides a balancing test governing the possible release to the public of proprietary information, should be accorded its fair and natural meaning. Judicial precedent does not require a restricted application of the balancing test.

RULES OF PRACTICE: PROPRIETARY INFORMATION

A decision that proprietary information should be withheld from the public should not be given effect for an indeterminate period of time. The Board should use its judgment to decide the length of time over which its decision should have effect; after that time, the agency should reach fresh decisions if there are Freedom of Information Act requests for the documents.

RULES OF PRACTICE: PROPRIETARY INFORMATION

10 CFR §2.790(b)(5), which establishes a balancing test for the release of proprietary information in the public interest, is a valid regulation

pursuant to authority granted to the Commission under the Atomic Energy Act of 1954.

RULES OF PRACTICE: PROPRIETARY INFORMATION

There is a long legal tradition supporting respect for proprietary interests and for the right of a proprietor to protect its secrets from public disclosure. Failure to protect such interests may adversely affect incentive to develop improved safety technology for nuclear reactors, and may make it more difficult for the Commission to collect important data.

RULES OF PRACTICE: PROPRIETARY INFORMATION

There is a long legal tradition supporting the right of the public to know the basis for judicial and agency action. The public's right to know is a basic concept of democratic government, related in part to the need for an adjudicator to expose possible mistakes to public scrutiny and to publish information as a symbol of responsibility to the public.

RULES OF PRACTICE: PROPRIETARY INFORMATION

When allegedly proprietary information is filed in a Commission proceeding, it should be accompanied by a full statement of the reasons why the submitter wishes the information to be withheld from the public. The statement should be sufficient in itself to be the basis for a decision whether to grant the request for confidentiality.

RULES OF PRACTICE: PROPRIETARY INFORMATION

Licensing Boards which decide that proprietary information should be released to the public should fashion their order so as to permit an appeal to be filed before the information must be released.

RULES OF PRACTICE: PROPRIETARY INFORMATION

It is not appropriate to restrict a proprietor from voluntarily releasing to the public some or all of the information which it has claimed to be confidential and has asked to have withheld from the public. A proprietor may dispose of its information as it may see fit.

MEMORANDUM AND ORDER
(Concerning a Motion to Release to the Public Certain Safety
Information Which is Part of the Record in this Case But is
Proprietary to Westinghouse Electric Corporation)

The resolution of Wisconsin Environmental Decade's (Decade) request for the release to the public of tube-sleeving tests filed in this case requires us to resolve a clash between fundamental values. On the one hand, we must consider the importance of public access to information relevant to the basis for government decisions that bear on public health and safety. On the other, we must consider the importance of protecting a private company's rights to the fruits of its research and development and the possible chilling effect that release of such information may have on further technological improvements in nuclear power reactor design and safety.

Each party to this case is committed to the overwhelming importance of just one of these values and relatively blind to the importance of the other. Decade is committed to the public's right to know. Westinghouse Electric Corporation (Westinghouse), Wisconsin Electric Power Company (applicant) and the Nuclear Regulatory Commission's staff (staff) are committed to the importance of protecting proprietary information.

Our interpretation of the Commission's regulations, discussed below, requires us to balance these fundamental values and to consider their application to the particular facts of this case. Our first step in this balancing process is to review the relevant legal materials, including cases interpreting the federal trade secrets act, which makes it a crime for a public official to release trade secrets unless authorized by law, and other cases concerning the importance of the public's right to know about the basis for court decisions. We then review relevant Commission precedent, which provides only incomplete guidance concerning the interpretation of the legal materials.

To resolve this difficult problem we permitted both sides to present their factual and legal positions fully. For example, we requested Westinghouse to supplement its initial affidavit, in which it gave reasons for withholding its safety tests from the public. We also requested Decade to supplement its factual support concerning the extent of its direct interest in the release of the contested information. To clarify the issues, we have asked a series of questions of staff and applicant. We also have been briefed by the parties on the appropriate application of the relevant Commission regulations. In addition, we were prepared to hold an evidentiary hearing or an oral argument, which are not necessary because the parties feel that an evidentiary hearing is not required and the Board concludes that it has no further need for hearings or arguments.

Our resolution of these fundamental clashes in values will not completely satisfy either side. We will not order the release or return of information about Westinghouse's tube-sleeving process, its distinctive methods for performing certain safety tests, and certain specific testing information that Westinghouse has argued would help to reveal its proprietary tube-sleeving process by helping its competitors to draw useful inferences about that process. On the other hand, there are several commonly performed, non-revealing safety tests, and the results of those tests, that should be released to the public or returned to Westinghouse. These tests are required by the American Society of Mechanical Engineers' (ASME) Boiler and Pressure Vessel Code Section IX or are routinely performed by Westinghouse's competitors; their release would not compromise important Westinghouse proprietary information.

The competitive advantage Westinghouse would enjoy if its routine, non-revealing tests are kept secret is that their release would provide its competitors with information about the performance of the Westinghouse proprietary sleeving process. We consider this interest less important than Westinghouse's more fundamental claims. Consequently, we find that the balance of interests requires that the public interest in release of this information be considered paramount.

I. REGULATIONS INVOLVED

The Brief of Westinghouse Electric Corporation, Appearing Specially, Concerning the 10 CFR §2.790(b)(5) Balancing Test, April 21, 1982 (Westinghouse brief) provides an excellent, concise statement of the regulations applicable to this proceeding, as follows:

10 CFR §2.790, after providing that final NRC records and documents regarding certain licensing actions or rulemaking proceedings generally shall be made available for public inspection, set forth nine categories of records which are to be exempted from disclosure. Included within these categories are "trade secrets and commercial or financial information obtained from a person and privileged or confidential" — *i.e.*, proprietary information. Paragraph (b) of §2.790 sets forth a special procedure for exempting proprietary information from public inspection. A person who proposes that the Commission withhold a document from public disclosure on the ground that it contains proprietary information must submit an affidavit which contains "a full statement of the reasons on the basis of which it is claimed that the information should be withheld from public disclosure" (§2.790(b)(1)(ii)). The statement must address with specificity certain considerations identified in §2.790(b)(4) of the regulation which the NRC will

take into account in determining whether the information sought to be withheld from public disclosure is in fact proprietary. §2.790 (b)(4) reads as follows:

- (4) In making the determination required by paragraph (b)(3)(i) of this section, the Commission will consider:
 - (i) Whether the information has been held in confidence by its owner;
 - (ii) Whether the information is of a type customarily held in confidence by its owner and whether there is a rational basis therefor;
 - (iii) Whether the information was transmitted to and received by the Commission in confidence;
 - (iv) Whether the information is available in public sources;
 - (v) Whether public disclosure of the information sought to be withheld is likely to cause substantial harm to the competitive position of the owner of the information, taking into account the value of the information to the owner; the amount of effort or money, if any, expended by the owner in developing the information; and the ease or difficulty with which the information could be properly acquired or duplicated by others.

If, after taking into account these considerations, the NRC determines that the document proposed for exemption from public disclosure contains proprietary information, the NRC then applies the balancing test pursuant to paragraph (b)(5) of §2.790. That test balances two factors: (a) "the right of the public to be fully apprised as to the basis for and effects of" a proposed Commission action, and (2) the "demonstrated concern for protection of a competitive position" of the owner of the information. Only if the first factor—the public right to be fully apprised—outweighs the second factor—the demonstrated concern—is proprietary information to be made public [or, as is required in adjudicatory proceedings, to be returned to the owner of the information. 10 CFR § 2.790(c)].

10 CFR §2.790(b)(5) reads:

[If the Commission determines, pursuant to paragraph (b)(4) of this section, that the record or document contains trade secrets . . . , the Commission will then determine]

- (i) whether the right of the public to be fully apprised as to the bases for and effect of the proposed action outweighs the demonstrated concern for protection of a competitive position and (ii)

whether the information should be withheld from public disclosure pursuant to this paragraph.

[Footnotes inserted into text.] *Id.* at 10-12.

Also relevant is 18 USC §1905, a part of the criminal code of the United States, which states:

Whoever, being an officer or employee of the United States or of any department or agency thereof, publishes, divulges, discloses, or makes known in any manner or to any extent *not authorized by law* any information coming to him in the course of his employment or official duties . . . *which information concerns or relates to the trade secrets, processes, operations, style of work, or apparatus, or to the identity, confidential statistical data, amount or source of any income, profits, losses, or expenditures* of any person, firm, partnership, corporation, or association . . . shall be fined not more than \$1,000, or imprisoned not more than one year, or both; and shall be removed from office or employment.

[Emphasis added in Staff Brief at footnote 9, p. 33.]

II. JUDICIAL PRECEDENT CONCERNING THE VALIDITY OF §2.790

Westinghouse, the staff and the applicant have urged on us a very narrow construction of §2.790(b)(5), which requires a balance of commercial advantage against the public's right to know. Their argument is that information should be released only if it has an important, direct effect on the public health and safety and that Decade has not demonstrated that such an effect would occur. The argument is based in part on interpretation of judicial precedent and in part on the history surrounding the adoption of the regulatory test. We reject this narrow reading of the regulation, which would be a tortuous reading of the words of the regulation itself. To explain our reasons for rejecting the argument, we find it necessary to review the principal relevant court cases.

Staff most adamantly urges that the "balancing test" in the regulations must be narrowly construed because the Commission has only limited authority to release proprietary information. The guiding case on this issue is *Chrysler Corporation v. Brown*, 441 U.S. 281 (1979), in which the Supreme Court ruled that an agency cannot release proprietary information in the public interest unless it has express statutory authorization to do so. In particular, the "housekeeping statute," 5 USC §301 (1976) was found to be insufficient authority to support the validity of a regulation that is "authorized by law" and had the effect of narrowing the scope of the Trade Secrets Act, which is a provision of the federal criminal code.

Chrysler also clarified the nature of the statutory authority required to be considered "authorized by law." It stated, at 441 US 308:

This is not to say that any grant of legislative authority to a federal agency by Congress must be specific before regulations promulgated pursuant to them can be binding on courts in a manner akin to statutes. What is important is that the reviewing court reasonably be able to conclude that the grant of authority contemplates the regulations issued.

See Humana of Virginia v. Blue Cross of Virginia 622 F.2d 76 (1980) (releasing proprietary information upon order of the Secretary of Health, Education and Welfare).

The Nuclear Regulatory Commission's authority for narrowing the scope of the Trade Secrets Act rests on authorization contained in the Atomic Energy Act, 42 USC §§2011-2281. The nature of that authorization is discussed in *Westinghouse Electric Corporation v. United States Nuclear Regulatory Commission*, 555 F.2d 82 (1977). Although that decision antedates *Chrysler*, there does not appear to be anything in *Chrysler* which undercuts its rationale, so that it is still the leading case on the Commission's authority to release to the public documents that are proprietary.

Some of the arguments presented to us in this case resemble those presented to the *Westinghouse* court and resolved by it. For example, that court rejected Westinghouse's argument that §103(b)(3) of the Atomic Energy Act precludes the disclosure of proprietary information in all circumstances. §103(b) states:

The Commission shall issue . . . [commercial] licenses . . . to persons applying therefor . . . (3) who agree to make available to the Commission such technical information and data concerning activities under such licenses as the Commission may determine necessary to promote the common defense and security and to protect the health and safety of the public. *All such information may be used by the Commission only for the purposes of the common defense and security and to protect the health and safety of the public.*

[Emphasis added in *Westinghouse* Brief at 15.]

Both *Westinghouse* and the staff rely on a portion of *Westinghouse* to support a restricted interpretation of the balancing test. *Westinghouse's* brief states:

In *Westinghouse* . . . the Court expressly agreed with the view that §103(b) of the AEA was intended to restrict Commission use of proprietary information, although the Court rejected an argument that such restriction precluded disclosure of such informa-

tion in all circumstances. (555 F.2d at 88-92.) In discussing the balancing test as phrased by the Commission in the 1976 Regulations here under consideration, the Court, after noting that in some respects it is "more favorable to the protection of proprietary information than prior versions," went on to quote the test and state:

There is no reason to believe that in applying this [balancing] test NRC will disregard the longstanding congressional policy which disfavors disclosure of proprietary information or that NRC will disclose proprietary information other than such as *bears on defense and health and safety.*" (555 F.2d at 92)

[Emphasis *changed* from the Westinghouse version.] Westinghouse Brief at 23-24. See Staff Brief at 15-18 (public disclosure of proprietary information was contemplated only in situations involving an emergency in which the danger to the public health and safety is imminent).

We find that Westinghouse and the Staff greatly overstate the significance of the passage they cite. Even that passage states that the NRC may "disclose proprietary information [that] . . . *bears on defense and health and safety.*" Moreover, this passage must be read in context, including the following passage, which occurs only three sentences further on in the *Westinghouse* opinion:

Section 103(b)(3) expressly grants the Commission the authority to use information collected to "promote" the common defense and health and safety of the public. In specific instances the disclosure of proprietary information may be totally consistent with the attainment of such goals. The statute elsewhere provides for public participation in licensing proceedings and for judicial review thereof. Health and safety have been overriding concerns in such cases. The provisions of the statute authorizing public participation are intended to help promote the health and safety of the public. *Disclosure of proprietary information forming the bases of a decision on a licensing matter may facilitate both informed administrative action and intelligent judicial review. Such use was, we believe, intended by the draftsmen of §103(b)(3). The section conditions the grant of a license upon an agreement by the applicant that the NRC may disclose its proprietary information to the extent that it bears upon issues of common defense and health and public safety.*

Westinghouse at 92.

Thus, we find that *Westinghouse* is direct authority that §2.790 is a validly enacted agency regulation that has the force of law, as that phrase is utilized in the Trade Secrets Act (18 USC §1905). *Id.* at 94. Further-

more, the court clearly condones the release of information, pursuant to §2.790, if it *bears on* public health and safety. It need not have any imminent connection to health and safety, as staff contends is required; and there is no concept embodied in the regulation that there is a paramount value of preserving the confidentiality of proprietary information, as Westinghouse contends. Instead, we find that the words of §2.790 have their natural meaning and that this Board must apply the regulation by balancing proprietary concerns against the public's need to know.

Despite this express judicial language, we have considered the possibility that *Chrysler* should be interpreted as affecting the logic of the *Westinghouse* court. However, since *Westinghouse* rests on a statute other than the Housekeeping Statute, there is no implication coming from *Chrysler*. We find the *Westinghouse* rationale to be supported by the words of § 103(b) (3), the purposes of the Atomic Energy Act, and an appreciation of the relationship between the public hearing provisions of that act and §103(b)(3). Therefore, the *Westinghouse* approach is currently still valid.

We are particularly impressed that *Westinghouse* links §103(b)(3) to the public hearing process. There is a tradition in American common law that there should be broad disclosure of the record of public proceedings. See *Nixon v. Warner Communications, Inc.* 435 US 589, 55 L Ed 2d 570, 98 S Ct 1306 at 435 US 580-581, summarizing the common law right of access to public records and citing four state cases supportive of that right, which is limited by a concern for "business information that might harm a litigant's competitive standing."

III. INTERPRETATION OF §2.790(a)(5)

Since we have concluded that §2.790(a)(5) was fully authorized by statute, we have no reason to interpret its scope narrowly because of limited Commission authority to promulgate the section. However, it also has been argued that Commission precedent and a ruling of the General Counsel both require a narrow interpretation.

A. Commission Precedent

We find that none of the cases cited to us directly interprets §2.790(a)(5). Hence, the cases cited have, at most, only suggestive authority. When there is a Commission regulation, duly promulgated, coexisting with other precedent in the general area, the regulation is controlling.

1. Emergency Core Cooling System Rulemaking

Westinghouse relies heavily on the authority of the Emergency Core Cooling System Rulemaking Proceeding (ECCS). *Selected Issuances of the Atomic Energy Commission and the Hearing Board in the Rulemaking Proceeding on Acceptance Criteria for Emergency Core Cooling Systems for Light-Water-Cooled Nuclear Power Reactors* (Docket RM-50-1), March 1975, TID-26713, United States Energy Research and Development Administration Office of Public Affairs. (ECCS proceeding.)

The Hearing Board in the ECCS proceeding decided that it should release to the public information which would be released pursuant to the Freedom of Information Act, as reflected in 10 CFR §9.5(a)(4). ECCS proceeding at 18. Our reading of the Board's decision persuades us that no consideration was given to the possible release of information as the result of the balance now found in §2.790(a)(5), which was amended in 1976. See, generally, our Memorandum and Order of February 2, 1982, LBP-82-6, 15 NRC 281, 283-285. Similarly, when the Commission affirmed the Board's ruling in the ECCS proceeding, it did not consider the possibility of releasing to the public record information which was proprietary. It did, however, say:

The Commission is mindful, of course, of the strong public interest in conducting a rule making proceeding which is as open as possible to full public scrutiny. Open consideration of the technical issues involved in this rule making matter was a motivating factor for the Commission in its experimental use here of a public rule making hearing. However, as our prior resume of the Board's rulings makes clear, the ground rules are rigorous for information qualifying as proprietary and their purport is to hold to an essential minimum that data which will not be considered in open hearing session.

In the latter connection, we would underscore that our present holding is confined to treatment of proprietary information during the hearing phase of this proceeding. Should such information form part of the basis for the ultimate rule making decision, the Commission will again—and in that context—address the question of that information's public disclosure.

Id. at 27.

Westinghouse then cites a slip opinion of a decision rendered by the Commission on December 28, 1973. Then Westinghouse introduces a series of citations to the transcript of the hearing, stating that these were highlights of the rulings sustained by the Commission.

We consider the *Rulemaking Hearing: Acceptance Criteria for Emergency Core Cooling Systems for Light-Water-Cooled Nuclear Power Reactors*

tors, CLI-73-39, 6 AEC 1085 (1973) to be controlling; however, Westinghouse's citations to the transcript are fourfold unacceptable. First, the Commission stated that it had not reviewed each page of the transcript and may well have differed from the Board on occasional details. *Id.* at 1086. Second, the Commission released data proprietary to Combustion Engineering and invited comment on the use of further data employed as part of the "basis" of its decision, thus explicitly recognizing the need to weigh the public interest against concealment of data. *Id.* at 1089. Third, the Commission announced that its conclusions on proprietary information were subject "to the outcome of our pending reexamination of policy and rules concerning data for which proprietary protection is requested. (38 *Fed. Reg.* 31543.)" *Id.* Fourth, we reject citations to an extensive hearing record as legal authority; such records are not readily available to the legal profession as sources of authority and the use of such materials would require this Board to study an entirely different record in order to place another Board's rulings in appropriate context.

The Westinghouse brief also, at p. 44, attempts to utilize rulings in the ECCS transcript as authority for what we consider to be basically factual findings: (1) that "bits and pieces of information of a proprietary 'puzzle' are entitled to protection, since they could lead to disclosure of the overall proprietary trade secrets or commercial information, etc."; (2) that test results . . . are entitled to protection; (3) that descriptions of how tests are performed . . . are part of the test process and hence are entitled to protection . . ."

We accept the appropriateness of these rulings in the context of a proceeding concerning acceptance criteria for emergency core cooling systems. However, judging the applicability of those factual rulings to the facts before us would require familiarity with the types of "bits and pieces" involved, including the nature of the tests for which protection was sought and the nature of the tests that were performed. We will not attempt to make that kind of thorough study of a record compiled in another proceeding. We consider the question of whether the information in our proceeding is part of a "rebus" or "puzzle" to be a factual question which we must decide from our record and not from a principle established elsewhere.

2. Other Precedent

The staff has directed our attention to a variety of precedent, most of it antedating the adoption of §2.790. We already were friendly with most of those precedents. Memorandum and Order, February 2, 1982, LBP-82-6, 15 NRC 284-285 ff. We fail to find any of these precedents supportive of any interpretation of §2.790 other than a reading of its plain words, which apply to the *public disclosure* of proprietary information, regardless of

whether these same data may already have been disclosed under protective order to the parties.

Northern States Power Company (Monticello Nuclear Generating Plant, Unit 1), ALAB-10, 4 AEC 390 (1970) and the ensuing Commission decision, at 4 AEC 409 (1970) states that the decision is "pending clarification of the regulations", which then referred to a 1972 revision that was under consideration. *Id.* at 410. Hence, this decision is not proper authority concerning a 1976 revision of the same regulations.

Nevertheless, we do accept two propositions for which staff cites *Monticello*. First, we believe that "great weight should be given to the position of the Director of Regulation" on proprietary matters. *Id.* at 399. Second, we would not ourselves release proprietary information without giving the Appeal Board an opportunity to review our ruling prior to release. *Id.*

Staff then cites several pre-1976 decisions which we consider to be of highly dubious application to §2.790. We will not discuss those decisions. Instead, we will analyze *Kansas Gas and Electric Company (Wolf Creek Nuclear Generating Station, Unit 1)*, ALAB-307, 3 NRC 17 (1976); ALAB-311, 3 NRC 85 (1976); ALAB-327, 3 NRC 408 (1976); LBP-76-42, 4 NRC 580 (1976); ALAB-391, 5 NRC 754 (1977); and we also will analyze *Pacific Gas and Electric Company (Diablo Canyon Nuclear Power Plant, Units 1 and 2)*, ALAB-600, 12 NRC 3 (1980). These are the two decisions that are either contemporaneous to or subsequent to the promulgation of §2.790 and are the decisions on which staff's legal precedent must rise or fall.

Wolf Creek involved an intervenor's request to discover a document that had never been filed with the Commission. Although the decision was rendered after §2.790 had been amended, the Appeal Board did not decide whether the amended rule would be applied. *Id.* at 414, footnote 6. Indeed, the Appeal Board limited its consideration to the appropriateness of discovering "information in the hands of a *private* party." *Id.* at 415. It refused to consider the applicability of §2.790, which applies to documents contained in the files of the Commission itself. *Id.* Nevertheless, the Appeal Board decided to apply the principles adopted in the ECCS Proceeding. It said:

The Commission's reference in its ECCS memorandum to the "strong public interest in conducting a rule making proceeding which is as open as possible to full public scrutiny" is no less applicable to adjudicatory proceedings. That interest most assuredly would be disserved were a licensing board or ourselves to place a veil of secrecy over some aspect of a licensing proceeding *in the absence of a concrete indication that it was necessary to do so to avoid significant harm to a competing, equally cognizable interest.*

[Emphasis added.] *Id.* at 417. The *Wolf Creek* decision then gave three numbered instructions to the licensing board. In the last of these numbered instructions, the appeal board directed that even after applicants had shown that their private document was proprietary, the licensing board should consider whether there are "countervailing considerations militating in favor of public disclosure which clearly outweigh the potential harm to Westinghouse and/or the applicants which might inure from such disclosure." *Id.* at 418.

In *Wolf Creek II*, ALAB-391, 5 NRC 754 (1977), also cited to us by staff, the Appeal Board said that "The only real question is whether the possibility of harm to Westinghouse was demonstrated with the requisite degree of particularity." *Id.* at 756. This does not mean that the "countervailing considerations" test of *Wolf Creek I* was rescinded, only that it was not seriously in contest during the appeal. Furthermore, the Appeal Board provided guidance for us in the way it scrutinized Westinghouse testimony in that case. It agreed with the licensing board's decision rejecting Robert A. Weisemann's testimony that "exact knowledge of the details of the cost and pricing provisions of the contract might convey to a competitor useful information bearing upon Westinghouse's business practices in general and pricing strategies in particular." *Id.* at 756. Hence, we infer that we should closely scrutinize general statements about alleged competitive harm in the process of reaching an appropriate balance for purposes of §2.790.

Nor is staff's citation of Judge Kornblith's dissent from the licensing board opinion particularly helpful to its position. Judge Kornblith, whose opinion was approved in *Wolf Creek II* at 758, applied a balancing test. *Wolf Creek I-A*, 4 NRC 571 at 594. First, he found that disclosure of the particular information involved would cause "significant commercial injury", which he had discussed in great detail. Then he found no "such weighty considerations" militating in favor of disclosure. *Id.* Approval of this reasoning by the Appeal Board merely means that the Appeal Board approves of the way the balance was struck in that case. There is no intimation that all proprietary information must be kept confidential, even under the *Wolf Creek I* standards. There certainly is no finding that the balancing test of §2.790, which was not applicable to *Wolf Creek*, should always be struck in favor of retaining the confidentiality of proprietary information.

Diablo Canyon, also cited by staff, is doubly inapposite. First, there was no argument in that case concerning the release in the public interest of the disputed proprietary information, which consisted of the applicant's security plan for protection of its nuclear facility. The entire argument in the case concerned the appropriateness of releases of *outside* information, obtained independently of the proceeding, but also found within the secu-

rity plan. Second, the great importance of keeping the security plan confidential is obvious; with the consequence that *had* the case determined that a security plan should not be released because of the public's right to know, there would have been no way to generalize from such a balance to the factual balance before the board in this case.

We conclude that the precedent cited by the staff does not support the strained interpretation it seeks to give to 10 CFR §2.790. Indeed, after reviewing Westinghouse's arguments and staff's arguments, we see every reason to accept the natural reading of that section as controlling and to apply the balancing test provided for by the clear words of that section. It is our duty to decide whether proprietary information should be released in the public interest, and this we shall do.

B. Conclusion

Precedent, not surprisingly, does not provide any reason for us to interpret §2.790 in any other manner than according to its plain meaning. Hence, we must weigh against one another:

- (1) the right of the public to be fully apprised as to the basis for and effects of a Commission action, and
- (2) the demonstrated concern for protection of a competitive position of the owner of the information.

We believe that this balancing test requires sensitivity to the importance of both of the interests to be balanced. It then requires specific attention to the facts of this case, so that we can classify the material before us in a way that will accommodate these important interests. In the next two sections of this opinion, we will review the nature of the interests to be balanced and then will face the factual questions before us in order to apply those interests to this case.

IV. THE INTERESTS TO BE BALANCED UNDER §2.790

There are two interests to be balanced, the commercial interest in retaining the confidentiality of proprietary information and the interest in granting the public access to the basis for the actions of their government. Both of these interests are of great importance.

One hope for increasing the safety (and reducing the cost) of nuclear power plants, is through the operation of a market for technological improvements. Careless release of trade secrets relating to improvements could adversely affect the operation of this market. On the other hand, the public's right to be informed about governmental action is basic to the structure of our constitutional government. It responds to the public's natural suspiciousness of secret government action. This suspiciousness, if it does not evoke an appropriate governmental response, also can help to

undermine the political support that is needed if further nuclear plants are to be constructed, pursuant to the objectives of the Atomic Energy Act.

The parties in this case have eloquently advanced the importance of the interest they consider most important to them. We think it is important to present part of their arguments as an aid to understanding the importance of these clashing values.

A. The Importance of Proprietary Information

Westinghouse has presented to us a carefully organized, persuasive defense of the importance of the protection of proprietary information. First, it reviews the history of the common law protection of trade secrets, which stands for the proposition that the law should maintain standards of commercial ethics, encourage invention and foster competition. Westinghouse Brief at 26-28, citing many cases, including *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470 (1974). Next, it states that there are 27 federal statutes enacted since 1934 that protect proprietary information from public disclosure and that the Freedom of Information Act (5 U.S.C. §552)(FOIA) exempts proprietary information from mandatory disclosure to the public. Westinghouse brief at 29.

The most persuasive portion of Westinghouse's presentation is contained in the following lengthy excerpt, which we generally endorse:

The safeguarding of proprietary information benefits a number of significant public interests. Any but the most restrictive public disclosure could (1) discourage initiation of research and development by private parties, (2) limit the knowledge of the existence of such information, (3) impair the Commission's independent review process, and (4) endanger the position of the United States as the world leader in nuclear power reactor technology.

. . .

In the past, there has always existed a free exchange of information between industry and the Commission, uninhibited by fears that valuable information would be disclosed to competitors. Westinghouse submits that the Commission did not intend the Section 2.790(b)(5) balancing test to be interpreted in any manner which would inhibit that free exchange.

It is merely stating the obvious to note that the competitive incentive by a reactor vendor to undertake research and testing is chilled by the prospect that the results of such research and testing can and will be made available to competitors. Furthermore, it follows that the reporting of such information to the Commission may be discouraged if the information thereafter is

openly available to competitors or other unauthorized persons. The result may well be to encourage disclosure of only the minimum amount of information believed necessary to obtain the sought-after license.

. . .

Moreover, the current protection afforded proprietary research and test data by the Commission results in more than one vendor submitting similar information on subjects of Commission interest, thus permitting the Commission, by means of comparison and cross-checking, to evaluate test accuracy, etc., without incurring the substantial delay and cost which would be associated with any research program which it otherwise might have to conduct in order to independently verify the accuracy, etc., of the test data.

Furthermore, if vendor proprietary information was disclosed without restriction, there would be a very great temptation to merely copy an analysis, problem solution, etc., of a competitor which previously had secured the approval of the Commission.

. . .

. . . Pricing practices in a competitive market where one vendor could anticipate receiving the benefits of another vendor's research and development soon would eliminate the inclusion of an allowance in the price for independently supported research and development work, contrary to the public interest. We believe that independent development work is beneficial to the industry, the Commission, and the public, and contributes to nuclear safety. Discouragement of this work should be avoided.

In addition, unrestricted disclosure of proprietary information could endanger the position of the United States as the world leader in nuclear power reactor technology. As the result of years of pioneering work on the power generation applications of nuclear energy, the United States currently is regarded as the world leader in nuclear reactor technology. Many benefits to the United States are the products of this world leadership position. For example: (1) the sale of U.S. reactors and technology abroad contributes significantly to this country's balance of payments; (2) the existence of a highly developed nuclear power generation technology will enable this country to meet its goal of energy self-sufficiency and eliminate its dependency on the energy resources of other nations for the continued growth of the U.S. economy; (3) nuclear power technology is a major source of employment in this country at a

time when the nation is continually confronted with unemployment and the shift of more and more U.S. jobs to foreign nations. Westinghouse brief at 34-38.

B. The Importance of the Public's Right to Know

1. Intervenor's Arguments

Wisconsin's Environmental Decade also has presented us with a persuasive presentation concerning the application of the public's right to know to the facts before us. It states:

The Commission has previously recognized that the importance of releasing to the public allegedly proprietary documents to explain the basis of its decision affecting safety outweighs any commercial interest in confidentiality. *Re Generic Emergency Core Cooling Systems* (1973), 6 A.E.C. 1085, 1088 ("ECCS"),

That precept applies with equal force here. Just as in the ECCS proceeding, the issue of degraded steam generator tubes in the case at bar is also a matter that potentially compromises the effectiveness of the plant's safety systems. If the adequacy of the sleeve installation cannot be assured through tests, an otherwise minor loss-of-coolant-accident could result in "essentially uncoolable conditions". Report to the American Physical Society by the Study Group on Light Water Reactor Safety, 47 *Review of Modern Physics* (Supp. 1), Summer 1975, at p. S-91.

Much of the contested documents for which confidentiality is claimed deal with difficulties in insuring the safety of sleeved tubes. For example, one section of the Westinghouse Sleaving Report discusses the problems in inspecting the joint between the sleeve and the tube. Westinghouse, *Point Beach Steam Generator Sleaving Report for Wisconsin Electric Power Company* (1981), WCAP-9960, at p. 7.7

If trade secret protection is accorded for this and other allegedly proprietary sections describing the serious problems of insuring safe installation of sleeves, the Decade will be unable to explain to its members, to the news media and the public at large the factual basis for its disagreement with the conclusion as to safety reached by the Staff, Westinghouse and Wisconsin Electric. Supplemental Affidavit of Peter Anderson, dated March 11, 1982 ("Supplemental Anderson Affidavit").

The Staff argues that the public will receive sufficient information from the expurgated versions of the safety test reports that *one of the adversary parties has selectively decided it was to its*

advantage to release and from the Staff Safety Evaluation Report that cannot reference any other part of the tests. Staff Br., at pp. 41 to 42. We beg to differ.

All that the public will see is the meretricious *conclusions* of the Staff, utility and vendor and the censored part of the facts showing only that which is favorable to one side: not the complete *facts* on which an informed person can reach his or her own opinion as to whether the judgment of the nuclear industry is adequate to protect the public health and safety.

It should be remembered that the judgment of the nuclear industry has been deemed inadequate by the two prestigious panels who evaluated the Commission's and the industry's performance. Kemeny Commission, at p. 56; Rogovin Group, at p. 91. It should be remembered, too, that concerns about the safety of Point Beach Nuclear plant are widespread in Wisconsin, as evinced by two editorials on the subject by the state's most respected newspaper, *The Milwaukee Journal*

Thus, in truth, the selective releases that would be permitted if a protective order were entered would probably be more *misleading* to the public than informative. This would not fulfill the public purpose of "the right of the public to be fully apprised as to the basis for and effects of the proposed action", 10 CFR §2.790(b)(5), as required by the Commission's rules. Responsible civic organizations would be improperly gagged from correcting these grave misconceptions.

Against this public importance of disclosure, the Board must recognize that the countervailing commercial considerations to be held in balance are not significant. For, the Decade is not challenging the central installation process in sleeving, but has conservatively limited its challenge to the narrow area of safety tests

. . .

2. Legal Precedent

Although Decade has not reviewed the relevant cases for us, the legal precedent in support of the public's right to information in court dockets is at least as venerable as the tradition in support of the confidentiality of proprietary information. That precedent appears to be applicable here because traditionally courts have performed a balance similar to the one required by our regulations; courts have weighed the rights of parties to keep matters confidential against the rights of the public to be informed about the court's docket.

A leading modern case on this subject is *Nixon v. Warner Communications, Inc.*, 435 U.S. 589, 55 L.Ed. 2d 570, 98 S.Ct. 1306 (1978). That case involved a request by Warner Communications, Inc., to obtain copies of magnetic voice tapes which had already been played in a public courtroom and whose transcripts had already been widely reported in the press. The Supreme Court said, at 435 U.S. 597 ff.:

. It is clear that the courts of this country recognize a general right to inspect and copy public records and documents, including judicial records and documents. . . . [A]merican decisions generally do not condition enforcement of this right on a proprietary interest in the document or upon a need for it as evidence in a lawsuit. The interest necessary to support the issuance of a writ compelling access has been found, for example, in the citizen's desire to keep a watchful eye on the workings of public agencies. [Citations omitted.]

[Footnotes omitted.]

In *Nixon*, the majority found that it did not have to apply the balancing test ordinarily used by the courts because Congress had already adequately balanced the interests involved in the Presidential Recordings and Materials Preservation Act, and it was not appropriate for the Court to supplant the legislatively provided method for granting public access. Two justices dissented, feeling that the Act was not determinative and the discretionary release of the tapes by the district court should be upheld.

United States v. Mitchell 551 F.2d 1252 (C.A.D.C., 1976), the Circuit Court antecedent to *Nixon*, cited earlier cases to support the proposition that American courts have viewed any limitation on the right to inspect and copy public records as "repugnant to the spirit of our democratic institutions." It also cited these earlier cases as explaining that this right serves

"as a check upon dishonest public officials, and will in many respects conduce to the betterment of the public service."

That the common law right to inspect public records extends to judicial records is clear. . . . What we said in [*Ex parte Drawbaugh*, 2 App.D.C. 404 (1894)] . . . remains equally true today: "Any attempt to maintain secrecy, as to the records of this court, would seem to be inconsistent with the common understanding of what belongs to a public court of record, to which all persons have the right of access. . ." *Id.* at 407

This common law right is not some arcane relic of ancient English law. To the contrary, the right is fundamental to a democratic state. As James Madison warned, "A popular Government without popular information, or the means of acquiring it, is but a Prologue to a Farce or a Tragedy: or perhaps both. . . . A

people who mean to be their own Governors, must arm themselves with the power which knowledge gives." Like the First Amendment, then, the right of inspection serves to produce "an informed and enlightened public opinion." Like the public trial guarantee of the Sixth Amendment, the right serves to "safeguard against any attempt to employ our courts as instruments of persecution," to promote the search for truth, and to assure "confidence in . . . judicial remedies."

[Footnotes omitted.] *Id.* at 1257-1258.

Crystal Grower's Corp. v. Dobbins, 616 F.2d 458 (1980) applied the *Nixon* test to documents which revealed conversations between a party and its attorneys. Such conversations are considered privileged and not subject to disclosure. Nevertheless, and without there being any petition for access pending before the court, the court balanced the public's need to know against the party's claim to privilege. It determined that the privileged information should be kept under seal for five years, subject to further order of the Court. *Id.* at 461-462.

Also relevant are time-honored decisions interpreting the right to a public trial in criminal cases. Although that right is not directly applicable in Commission proceedings, its rationale is relevant to the balancing test we must apply. As the Supreme Court said in *Re Oliver*, 333 U.S. 257, 92 L.Ed. 682 (1948):

The knowledge that every criminal trial is subject to contemporaneous review in the forum of public opinion is an effective restraint on possible abuse of judicial power. One need not wholly agree with a statement made on the subject by Jeremy Bentham over 120 years ago to appreciate the fear of secret trials felt by him, his predecessors and contemporaries. Bentham said: . . . "Without publicity, all other checks are insufficient: in comparison of publicity, all other checks are of small account. Recordation, appeal, whatever other institutions might present themselves in the character of checks, would be found to operate rather as cloaks than checks; as cloaks in reality, as checks only in appearance."

[Footnotes omitted.] *Id.* at 333 U.S. 270-271.

Although cases before the Nuclear Regulatory Commission do not deprive individuals of liberty and were not subject to the same constitutional guarantees of public trial as were criminal cases, our founding fathers did not conceive of civil cases of potentially as wide-reaching importance as are the cases of this Commission. Although industry and government have apparently been successful in safeguarding the lives and health of nuclear plants' neighbors, it is not surprising that the neighbors consider the Commission's proceedings of very great importance. Their

concern for obtaining a public record of our proceedings, though not sanctioned by a constitutional provision, is entitled to sympathetic treatment by their government.

3. Application to this Proceeding

Applicant and staff have urged on us the view that the public is well-enough served in this proceeding because all the parties, including the intervenors, have had access to the proprietary safety tests whose release is sought by Decade. We disagree with this view. First, it is inconsistent with §2.790, which governs release of information to the public at large, regardless of whether it has already been released to parties under a protective order. Second, the view suggests that this Board should consider the parties to this proceeding as trusted caretakers of the public interest and that further public scrutiny of the basis for our decision is not necessary.

We do not believe that any public body should consider itself beyond review by the people, to whom it is responsible. Neither this Board nor the staff is beyond error. Generally, this Board and the staff of the Commission approach their jobs conscientiously, with a careful eye to the public interest. But the issues we address are complex and the exposure of the basis for our decisions to possible public review is extremely salutary.

It is easy to believe that the technical information before us is so difficult to analyze that it would not be understood by the public and that its release would therefore be pointless. In a complex society, certain kinds of information admittedly are not within the general grasp. However, knowledgeable members of the public may, from time to time, take an interest in the detailed bases of our decisions. Their review could potentially uncover important defects in our reasoning or could suggest improvement in Commission procedures.

Even if the public never exercises its right of review, the public availability of our record is a symbol of our good faith and responsiveness to the people. Such symbols are important in a government which derives its support from the consent of the governed.

The effect of disclosure on the future of the nuclear industry also is worth considering. The future of that industry depends on its winning public acceptance and political support. To the extent that this Commission acts in unnecessary secrecy, that secrecy will cause suspicion that will undermine support for further nuclear power reactors. On the other hand, an open record will expose the industry to the light of truth. If the records show safety flaws, trust in the industry will rightfully decline. If the records do not show flaws, the openness of the record may contribute positively to the industry's future.

C. Weighing Proprietary Interests Against the Right to Know

We conclude that Westinghouse's right to protect legitimate proprietary interests is very important. A company must be confident that it can share information with the Commission. A company must also have the incentive to develop safety improvements, secure in the belief that the fruits of its efforts will not freely be disclosed to its competitors.

Likewise, the public's right to know the basis for our decisions is an important right, related to confidence in government and confidence in the nuclear industry. It is a right derived from fundamental principles of democratic government.

Fortunately, this Board is not required to weigh these important interests in the abstract. In the next section of this opinion, we will explain how we have been able to apply these global interests to the mundane facts of this case. By restricting our attention to the specific facts before us, we have been able to apply the balancing test set forth in the regulations. regulations.

V. APPLICATION OF PRINCIPLES TO FACTS

A. The Current Balance

Often the result of a law case is governed more by the way a question is asked than by the way the answer is supplied. Westinghouse repeatedly asks us to decide not to release "the" Westinghouse proprietary information. It urges us to consider all of the information as a unitary, undifferentiated mass.

There is one way in which the mass of information is unitary: it is all part of the record in this case and is all relevant to admitted contentions concerning the structural integrity of sleeved tubes, including their resistance to corrosion. Consequently, it was all part of the basis for our decision to permit Wisconsin Electric Company to conduct a tube sleeving demonstration program.

However, for purposes of considering whether individual tests or test results should be released, we consider it appropriate to consider the relative harm to Westinghouse which release might cause; we have therefore divided the information into four categories. Three of the categories we formed were found eligible for continued protection. These categories include: (1) all information related to the Westinghouse repair process, including materials, processes for installation and design dimensions; (2) all tube-sleeving test information which has been reasonably shown to disclose important information about the first category of information, and (3) all information whose release would disclose tests or features of tests which bear on safety and were developed by Westinghouse and proprietary to it.

Category (4) contains all tests and test results which bear on safety and do not fall in the other three categories. We have decided that information falling in Category (4) and contained in our record should be released to the public or returned to Westinghouse.

Westinghouse argues that we are precluded from considering Category (4) to be a separate category. It argues that all of its information is governed by its the "piece of the puzzle" principle (PPP). Westinghouse Brief at 52. Here is how Westinghouse explains that principle:

Westinghouse can never know for certain how much if any of the information it obtains about its competitors' processes fills in another part of Westinghouse's overall understanding of such processes. This situation is analogous to the TV game show in which the contestants are faced with a large panel consisting of perhaps as much as 20 blocks. As each block is turned over, the contestants in turn attempt to solve the rebus that would be revealed when all the blocks are turned over. Some contestants are unable to solve the rebus even when all the blocks are turned over but some actually are able to solve the rebus with only the first block turned over. At some point, one piece of additional information, even though it may be insignificant in itself, enables one to deduce the entire picture. . . . (Wiesemann 3/23/82 Supplementary Testimony at 5.)

The Board considers the PPP to be a factual assertion. Clearly, there are tests whose results reveal enough of a process so that knowledge of the results of those tests would constitute knowledge of a piece of the puzzle. However, that general argument does not demonstrate that the results of every test would be useful in that way. For example, a particular "strength" of a sleeved tube is a product of the metals involved, the kind of bond or weld, the craftsmanship or technique used for effecting the joining, the position of the joint and other unknown factors. Depending on the nature of the test whose results might be disclosed, inferences that may be drawn could be remote or useless, even in combination with other available test results.

The best information available to us concerning the specific doubts we have about the PPP is available from Westinghouse and the staff. To obtain this information, we asked several questions, two of which we now consider to be determinative. First, we asked:

Which of the tests performed by Westinghouse in order to comply with ASME [American Society of Mechanical Engineers] standards would be routinely performed by any company seeking to comply with those standards, or are in fact required to be performed by the standards themselves. [Originally, we said ANSI when we should have said ASME.]

We found the staff's answer helpful. It consisted of an affidavit by Emmett L. Murphy, a qualified mechanical engineer employed as a Materials Engineer in the Division of Engineering, Office of Nuclear Reactor Regulation, of the NRC. In his affidavit, Mr. Murphy listed each of the tests performed by applicant and classified each as to whether (1) it was required by a code or by the Commission, and (2) it was considered likely to be performed by a Westinghouse competitor. We consider the second criterion, likely to be performed by a competitor, to be more important because we conclude that if a competitor would likely perform the same test then it may be presumed (absent specific contrary evidence) that it would gain only a minimal amount of information from knowing that Westinghouse has performed the test.

We have accepted Mr. Murphy's uncontradicted testimony that only certain tests would be performed by Westinghouse's competitors and we have decided not to release any of the tests that would not be performed by competitors. (In order to preserve the confidentiality of the tests pending appeal, we shall adopt the convention of referring to the tests by using the numbers utilized by Mr. Murphy in his affidavit, filed with us by the staff on March 23, 1982.)

The other important question we asked, following-up on Mr. Murphy's testimony, was:

How would the data from . . . tests [1(a-d), 2, 3, 4, 5, 6, 8 and 11] be useful, or potentially useful, in deducing the nature of the Westinghouse process.

Although the staff refrained from answering this question, we found the Westinghouse response helpful. A summary of the Westinghouse response and of the Board's conclusions on each test is contained in Table 1.

TABLE 1
WESTINGHOUSE COMMENTS AND BOARD CONCLUSIONS
ABOUT TESTS LIKELY TO BE PERFORMED
BY A WESTINGHOUSE COMPETITOR

Test Number	Westinghouse Comment	Board Conclusion
1	B&W tests ^a were far less extensive than those done by Westinghouse.	Release only tests, test descriptions and test results from tests similar to B&W tests.
2	Same as for Test 1.	Same conclusion as for Test 1.

Test Number	Westinghouse Comment	Board Conclusion
3	This test is prescribed by ASME code. Details of how the test was done could assist B&W in test design. Also: could assist B&W to apply tests to their program and provide information about Westinghouse's quality.	Release test, test descriptions and test results <i>but</i> delete proprietary details. Reject argument; B&W cannot use the tests because the process tested is not known. Value of performance information does not preclude release.
4,5	Results could permit specific inferences about the proprietary process.	Do not release.
6	Would reveal important characteristics of process.	Do not release.
8	Test not performed by B&W and its use could be helpful to it.	Do not release.
11	Test process is proprietary.	Do not release.

⁴ Tests performed by Babcock and Wilcox (B&W) for the R.E. Ginna Nuclear Power Plant were included in NRC Docket No. 50-244 (October 5, 1980), with confidential information deleted. This information was attached by Westinghouse to the April 14, 1982 testimony of Robert A. Wiesemann. These data were the basis for many of Mr. Wiesemann's conclusions.

Table 1 shows the balance we have struck for each test and its results. We have accepted the uncontradicted testimony of Robert A. Wiesemann concerning the effect on Westinghouse from the release of each test and its results. Consequently, as Table 1 indicates, we have decided that most of the tests and their results cannot be released but that some may.

We also have accepted the argument that Westinghouse should be able to conceal from its competitors the identity of tests which it has performed but that they have not. Westinghouse's judgment could suggest to its competitors ways of improving their ability to compete. However, to the extent that Westinghouse and its competitors use similar tests, the tests and their results can be released.

Before we decided that test results of "similar" tests should be released, we rejected a Westinghouse argument that these results would be useful to its competitors. These tests support the strength and other characteristics of tubes sleeved with a Westinghouse proprietary process. Since the competitors do not know what that process is, the results of the tests cannot be used to support the safety of their sleeving processes. Mere speculation that they may learn the details of the Westinghouse process is not an adequate countervailing consideration to the right of the public to know the results of these tests. Although it may be possible for an applicant to refer to generic tests performed on a design that it is using, those generic tests are relevant only because the applicant is using the known design. There is no way a test on an unknown design could be submitted for use by the Commission.

Admittedly, some useful information will be gained by Westinghouse competitors from the release of the results of tests that are commonly performed within the industry. However, we do not consider the release of this type of information to be sufficiently harmful to Westinghouse to counterbalance the importance of the right of the public to be informed. In many other industries, so many units of a manufactured product are sold that the product and its performance characteristics become widely available to competitors. In addition, certain performance characteristics of consumer products are required by law to be disclosed (e.g., miles per gallon for automobiles, efficiency rating for electrical appliances).

The legal requirement that test results be disclosed applies equally to all steam generator repair competitors, with the result that some guesswork would be removed from the competitive equation. However, it is arguable that this result will enhance rather than interfere with competition. On balance, the release of information of this kind will not cause Westinghouse any serious competitive harm.

Westinghouse also has argued that some of its tests have been specially designed by it and that its test designs should not be released. To demonstrate how special its designs are, it invited the Board to view its testing facility—a trip the Board declined to take because it considers it irrelevant to the task before it. We accept Westinghouse's testimony that some of its tests are unique and should not be revealed. However, the remedy appropriate for that malady is to treat the appropriate details of the tests as proprietary. We shall call on Westinghouse to identify the text passages containing these proprietary details and to delete only those details.

In some instances, Westinghouse also has demonstrated that releasing the types of tests it has performed or releasing certain test results would reveal portions of its proprietary sleeving process. We have accepted each

of these Westinghouse arguments as a reason to keep the names of the tests or the results of the tests proprietary.

B. Dynamic Nature of the Balance

Having reached a conclusion on whether each test and its results may be released, we find that only three types of tests can now be released. (See Table 1.) Hence, the present situation is that the specific balance in this case generally favors continued confidential treatment of proprietary information, and the public record will not contain important empirical information on which we have relied.

The balancing test we must apply requires this lack of public information for the time being. However, the passage of time can help to cure this problem because the market for tube sleeving may change or disappear. This would affect the appropriate balance. *See Wolf Creek, supra* (information concerning uranium pricing practices cannot be kept confidential after Westinghouse has discontinued participation in that particular marketing activity). Similarly, Westinghouse's competitors may begin using more tests, thereby diluting Westinghouse's claims and requiring, pursuant to principles that we have discussed, that more tests and results be released. Other changes, less foreseeable, could occur—including the development by Westinghouse of an entirely new and far superior remedy for steam generator problems, thereby completely outdating the commercial importance of its current concerns. As Westinghouse has pointed out, time is fickle and could even cause the sleeving process and the testing program to become increasingly valuable, rather than depriving it of its proprietary nature. Wiesemann Supplementary Testimony at 4.

C. The Duty to Provide a "Full Statement" of Reasons

As we pointed out above, §2.790 requires that a person proposing that a document be withheld from public disclosure should submit an affidavit containing "a full statement of the reasons on the basis of which it is claimed that the information should be withheld from public disclosure." We believe it is the intent of this requirement that, ordinarily, that full statement will provide the entire basis for deciding whether or not to grant the proposer's request for withholding.

We need not decide whether Westinghouse's filing would have been adequate for its purposes if its filing had not been necessary to our decision but had been submitted solely for staff review. Our concern in this case is whether the "statement" was adequate to support withholding in the context of a licensing hearing. In our view, the filing should have been fully supplemented when it was filed in a licensing proceeding. For that purpose, it was not adequate and we could have held Westinghouse to the

plain words of §2.790(b)(5) and dismissed its proposal for withholding proprietary information without further ado.

Because of the limited quantity of decisions concerning a "full statement", we find that the Department of Energy's body of case law on the Freedom of Information Act is helpful. Consequently, we alerted the parties to the possible relevance of *Exxon Company, U.S.A.*, BFA-0609 and BFA-0614, 9 DOE 80162, April 1, 1982. That case stands for the proposition that a company has special knowledge of competitive injury that might affect it and that its information cannot be withheld from the public without a statement of "the reasons harm will result from disclosure." We interpret the Commission's "full statement" requirement as giving an applicant for withholding of information contained in a hearing record the obligation to state the "reasons harm will result", as well as evidence of the magnitude of the harm. Both of these statements are necessary for information contained in a hearing record to be kept confidential.

In this case, however, in light of contrary staff practice and the importance of this information to Westinghouse, we believe it would have been incorrect for us to apply such a strict interpretation of the "full statement" requirement. The consequence is that we had many filings, at great expense to the parties and to the government. In future cases, however, such lengthy proceedings should not be necessary. The principal question for boards to decide would be the adequacy of the supporting affidavit. For the most part, the taking of supplemental affidavits or testimony and provision for submitting briefs should not be necessary.

We also realize that the balancing test itself imposes costs on Westinghouse and others seeking to protect proprietary information. This cost undoubtedly will play a part in reducing the incentive to conduct safety and environmental research and development. However, that test is required by the regulations and its careful application is necessary in order to protect another important public interest, the right to know the basis for licensing board decisions.

VI. AN APPROPRIATE FORM OF ORDER

It is an accepted practice in cases involving the possible release of information that the company claiming a proprietary interest in the information should have a prior opportunity to challenge its release. Else, release of the information would moot the case and deprive the alleged owner of the information of its day in court.

To provide Westinghouse with its day in court we provide that our order will not go into effect if it files an appeal within 30 days of its issuance.

Filing of an appeal will suspend the effect of our order until 30 days after final action on the appeal.

Our order, when it goes into effect, will require Westinghouse to indicate its intent to accept the return of its proprietary information to it. At that time, the Licensing Board will decide whether return is appropriate in this case, as it ordinarily is. 10 CFR §2.790. The relevant question concerning return would, at that time, be whether Westinghouse waived its rights to return, when Wisconsin Electric Co. (at that time acting for Westinghouse with respect to confidentiality matters) agreed to a procedure in which allegedly confidential information was used to authorize a tube sleeving demonstration project, subject to a subsequent determination concerning whether the information should continue to be withheld.

Our determination affects all information in our record related to the tests and test results we have found should no longer be accorded proprietary protection. Accordingly, the Order specifies a procedure for the release of all such information. The balancing test provided for in §2.790 is applicable to our entire record and there is no reason to restrict its application to the *Point Beach Steam Generator Sleeving Report for Wisconsin Electric Power Company WCAP-9960 (Proprietary)*, September 18, 1982, even though that report was the principal focus of the arguments before us.

VII. MISCELLANEOUS MATTERS

Decade has ardently argued that this Board should restrict Westinghouse's right to voluntarily release its own proprietary information. Decade argues that this right to arbitrarily release information provides Westinghouse with an unfair publicity sword.

We agree with Decade that the ability to release proprietary information does give Westinghouse an advantage. However, that advantage is wholly within its rights to deal with its own information as it likes. The one deterrent to overuse of this "right" is that too-frequent use of proprietary information for political advantage would call into question, in future cases, the seriousness of Westinghouse claims of commercial injury from the release of its information.

Additionally, Decade has argued that it has been deprived of due process because it did not receive, even under protective order, the exact dollar figure of Westinghouse's investment in its proprietary process. This issue was discussed during a telephone conference on March 4, 1982 and was not raised again until Decade filed its brief on April 20. At the conference, the Board raised the issue of the dollar figure. Westinghouse questioned Decade's need for the dollar figure, stating that "if they give a good basis that sounds reasonable . . . we might not object to giving it to

Mr. Anderson . . . Tr. 1139. To that, Mr. Anderson objected that he did not have to explain why he needs information "when we don't know what the matter is." *Id.* Based on that statement, the Board abandoned the matter and did not rule. When, at the conclusion of the conference, we asked if there were "further matters", Mr. Anderson remained mute.

We do not believe that lack of access to this dollar figure prejudiced Mr. Anderson in the presentation of his case. Had he stated why the dollar figure was relevant, as assuredly he could have done, he would have obtained it during the March 4 conference. However, at this time, we have concluded that the figure is relevant to the commercial value of the process, and we will order that it be turned over to Mr. Anderson under protective order for his use in this case and the subsequent appeals.

ORDER

For all the foregoing reasons and based on consideration of the entire record in this matter, it is this 26th day of May, 1982,

ORDERED

(1) Paragraphs (2) through (7) of this order shall go into effect 30 days from the date of its issuance unless an appeal is filed before its effective date. The effect of these paragraphs shall be suspended during the pendency of an appeal.

(2) On the first business day following the date this decision becomes effective under paragraph (1), Westinghouse Electric Corporation (Westinghouse) shall file a statement with the Nuclear Regulatory Commission indicating whether it consents to the release to the public of all the information ordered to be released by this Board, both in this Memorandum and Order and in our previous Memorandum and Order dated December 21, 1981 (LBP-81-62, 14 NRC 1747) and served December 22, 1981.

(3) If Westinghouse assents to the release of all information covered by our order, pursuant to paragraph (2) of this order, it shall file with the public document room of the Nuclear Regulatory Commission, within ten additional days, a copy of each document submitted by it in this case from which the only deletions are those permitted by the Board. The documents involved include the *Point Beach Steam Generator Sleaving Report for Wisconsin Electric Power Company WCAP-9960 (Proprietary)*, September 28, 1981 and the *Steam Generator Repair Report for Southern California Edison San Onofre Unit 1* (March 1981). The Information which must be released is the information specified in Table 1 and discussed above. References in Table 1 are to the listing of tests contained in the affidavit of Emmett L. Murphy (filed March 23, 1982) at p.3.

(4) In lieu of paragraph (3) of this order, Westinghouse may make any other arrangement with the public document room which will make it feasible for the public document room to release to the public, at the time specified in paragraph (3), all the information ordered by the Board to be released.

(5) Within 10 days of the time Westinghouse complies with paragraphs (3) and (4) of this order, the Staff of the Nuclear Regulatory Commission shall either refile documents so that information ordered to be released can be released or shall arrange with Westinghouse to file such documents within the ten day deadline.

(6) If Westinghouse objects to the release of any information pursuant to paragraph (2) of this order, it shall file with this Board (or with the Commission if the Board should no longer be in existence) a brief concerning the effect of its objection on this proceeding and concerning whether or not the right to the return of the information has been waived. Other parties to this proceeding may reply in writing within ten days.

(7) This memorandum and order does not prohibit the release of any information in the record of this case after two years from the date of its issuance. At that time, matters in our record may be released as a result of a request filed pursuant to the Freedom of Information Act. That request shall be determined pursuant to principles explained in this decision, unless modified on appeal or by subsequent applicable precedent. Accordingly, no Westinghouse proprietary information will be released pursuant to the request unless the standards set forth in this decision are met.

(8) Regardless of whether the other provisions of this order become effective, Westinghouse shall furnish to Decade, subject to protective order, the dollar figure representing its expenditures on its sleeving process.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**Peter B. Bloch, Chairman
ADMINISTRATIVE JUDGE**

**Jerry R. Kline,
ADMINISTRATIVE JUDGE**

**Hugh C. Paxton
ADMINISTRATIVE JUDGE**

Bethesda, Maryland

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges

James A. Laurenson, Chairman
Dr. Peter A. Morris
Dr. Jerry R. Kline

In the Matter of

Docket No. 50-255-SP

CONSUMERS POWER COMPANY
(Palisades Nuclear Power
Facility)

May 28, 1982

The Administrative Law Judge grants the joint motion of the Union and Staff to terminate this proceeding in light of the fact that restrictions on overtime work of licensed operators ordered by the Director of Inspection and Enforcement have been rescinded by the Administrator of NRC Region III.

**MEMORANDUM AND ORDER APPROVING JOINT
MOTION TO TERMINATE PROCEEDING**

I. JURISDICTION AND PROCEDURAL HISTORY

On March 9, 1981, the Director of Inspection and Enforcement issued an "Order Confirming Licensee Actions to Upgrade Facility Performance." This Order included restrictions on overtime work of licensed operators more restrictive than the Commission's general standards applicable to overtime work. On March 31, 1981, the Utility Workers Union of America, AFL-CIO and the Michigan State Utility Workers Council, (hereinafter "the Union"), filed a "Petition for Hearing." On May 29, 1981, the Commission issued an Order referring the "Petition for Hearing" to the Atomic Safety and Licensing Board Panel to decide whether the Union should be granted a hearing and, if so, to conduct the hearing. The Atomic Safety and Licensing Board constituted to decide this matter denied the "Petition for Hearing" on July 31, 1981. On March 31, 1982, the Atomic Safety and Licensing Appeal Board reversed the Licensing

Board, permitted the Union to intervene, and remanded the matter to the Licensing Board for further proceedings. Pursuant to motions by the NRC Staff and orders of the Commission, the time for filing a motion for the Commission to review the Appeal Board decision has been extended until June 9, 1982. On May 11, 1982, the Staff and Union filed a "Joint Motion to Terminate Proceeding."

II. JOINT MOTION TO TERMINATE PROCEEDING

The Joint Motion states:

"[O]n April 21, 1982, the Administrator of NRC Region III issued a 'Partial Rescission of Order' that adjusted the terms of the Director's Order of March 1981. The revised restrictions are consistent with the Commission's policy statement on *Nuclear Power Plant Staff Working Hours*, 47 Fed. Reg. 7352 (Feb. 18, 1982)."

The "Partial Rescission of Order" revises the work hour or overtime restrictions to conform to the Commission's general policy on nuclear power plant staff working hours, 47 Fed. Reg. 7352. The "Partial Rescission" also notes that the initial Order of March 9, 1981 was promulgated because "the Staff was concerned that operators at the plant, who already appeared to be working excessive amounts of overtime, would be required to work increased overtime" However, since the time this Order became effective, the Staff stated that Consumers Power Co., the licensee, improved its control over operation of the plant and the concern about excessive overtime hours "has been substantially ameliorated." In view of the "Partial Rescission," the Union withdrew its request for hearing and moved jointly with the Staff to terminate this proceeding. Consumers Power Company did not oppose the motion.

The Commission recognizes and encourages fair and reasonable settlement of contested issues. 10 CFR §2.759. We have considered all of the factors enumerated above. We conclude that the settlement and "Partial Rescission of Order" are fair and reasonable and should be approved.

ORDER

WHEREFORE, IT IS ORDERED this 28th day of May, 1982, at Bethesda, Maryland, that the Joint Motion to Terminate this proceeding is **GRANTED** and this proceeding is hereby **DISMISSED**.

James A. Laurensen, Chairman

Dr. Peter A. Morris

Dr. Jerry R. Kline



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

Harold R. Denton, Director

In the Matter of

**Docket Nos. 50-250
50-251
(10 CFR 2.206)**

**FLORIDA POWER & LIGHT CO.
(Turkey Point Power Plant,
Unit Nos. 3 & 4)**

May 5, 1982

The Director of Nuclear Reactor Regulation denies a petition under 10 CFR 2.206 that requested suspension of license amendments authorizing steam generator repairs.

**RULES OF PRACTICE: INTERVENTION; REQUESTS UNDER 10
CFR 2.206**

A potential party to agency proceedings must act affirmatively to protect his rights to participate in a proceeding. He may not await the outcome of the proceeding and only then attempt to take part in the process by invoking 10 CFR 2.206 or 10 CFR 2.802.

DIRECTOR'S DECISION UNDER 10 CFR 2.206

By petition dated April 6, 1982, Mr. Joel Jaffer requested pursuant to 10 CFR 2.206 that the Nuclear Regulatory Commission suspend the license amendments previously granted to Florida Power & Light Co. for steam generator repair of Turkey Point Nuclear Units 3 & 4 until the Commission completes action on a rulemaking petition submitted by him. Mr. Jaffer asserts that the rule change he proposes "will determine a jurisdictional defect in the license amendments, as to the public hearing required under . . . Section 189a of the Atomic Energy Act."

For the reasons set forth below, Mr. Jaffer's request for suspension of license amendments authorizing repair of the Turkey Point Units 3 & 4 steam generators is *denied*.

I.

Background

The license amendments authorizing Florida Power & Light Company to repair the steam generators in its Turkey Point Nuclear Units 3 & 4 were issued by the Office of Nuclear Reactor Regulation (NRR) on June 24, 1981, following a decision by the Atomic Safety and Licensing Board (ASLB) authorizing their issuance. In a Memorandum and Order issued on May 28, 1981, LBP-81-14, 13 NRC 677, the ASLB granted summary disposition of all contentions involving the proposed repairs; on June 19, 1981, the Board issued a final order permanently cancelling the evidentiary hearing concerning the proposed amendments and authorizing the Director of NRR to issue the amendments. LBP-81-16, 13 NRC 1115. Mr. Jaffer was not a party to that proceeding.

Mr. Jaffer requested leave to file an *amicus curiae* brief before the Atomic Safety and Licensing Appeal Board in the appeal taken by Mark Oncavage, a party to the license amendment proceeding. Mr. Jaffer's request was denied on October 9, 1981, on the basis that the request was untimely and that he did not adequately show why it was not possible to have acted at an earlier date.

On November 30, 1981, the Appeal Board affirmed the decisions of the Licensing Board. ALAB-660, 14 NRC 987. That decision became final on February 18, 1982.

Mr. Jaffer also sought review of the ASLB decision in the U.S. Court of Appeals for the D.C. Circuit. The Court of Appeals denied his motion for leave to file a petition for review *in forma pauperis* and his motion for temporary restraining order and stay on the grounds that he was not a party to the administrative proceeding and therefore lacked standing to seek review. *Jaffer v. NRC*, No. 81-8035 (D.C. Cir., Oct. 2, 1981), *rehearing denied* (Dec. 7, 1981).

II.

On February 12, 1982, Mr. Jaffer, pursuant to 10 CFR 2.802 of the Commission's regulations, filed a one-page petition for rulemaking with the Commission seeking the "promulgation of rules giving legal and binding effect to requests for information and authorized communications to appropriate employees of the Commission over WATS and business telephone lines which it supports and operates and public hearings in which the Commission and/or such employees are involved." Section 2.802(c) de-

scribes certain information which must be included in a petition for rulemaking in support of the action sought before a petition for rulemaking will be formally docketed for consideration.¹ On April 2, 1982, the Executive Director for Operations (EDO) of the NRC notified Mr. Jaffer that his petition was incomplete in that it did not meet the criteria established for petitions filed with the Commission. Specifically, the request did not clearly describe the problem to be corrected nor did it provide any proposed text of the amendment. In addition, the Executive Director stated, "It is not clear to us what you want the NRC to do, or how the NRC can amend its regulations to alleviate what you perceive to be a problem. In addition, your petition does not clearly and concisely state your interest in the action requested."²

Thus, Mr. Jaffer's petition for rulemaking is not currently before the Commission for consideration. Consequently, there is no action under consideration by the Commission which might have any impact on the effectiveness of the Turkey Point license amendments. Even if Mr. Jaffer's petition for rulemaking had been docketed, however, there is nothing in either the Commission's regulations or the apparent nature of the rule proposed by Mr. Jaffer which establishes a basis to suspend the license amendments granted to Turkey Point Units 3 and 4.

Section 2.802(d) of the Commission's regulations provides that a rulemaking petitioner may request the Commission to suspend all or any part of any licensing proceeding to which the petitioner is a party pending disposition of the petition for rulemaking. That section has no application here for several reasons. Mr. Jaffer's petition for rulemaking is not currently before the Commission for action. Even if it were, no proceedings regarding the Turkey Point license amendments remain before any adjudicatory body in the Commission. Finally, as noted above, Mr. Jaffer was

¹ The regulation states:

(c) Each petition filed under this section shall:

(1) Set forth a general solution to the problem or the substance or test of any proposed regulation or amendment, or specify the regulation which is to be revoked or amended;

(2) State clearly and concisely the petitioner's grounds for and interest in the action requested;

(3) Include a statement in support of the petition which shall set forth the specific issues involved, the petitioner's views or arguments with respect to those issues, relevant technical, scientific or other data involved which is reasonably available to the petitioner, and such other pertinent information as the petitioner deems necessary to support the action sought. In support of its petition, petitioner should note any specific cases of which petitioner is aware where the current rule is unduly burdensome, deficient, or needs to be strengthened.

² In accordance with 2.802(f), Mr. Jaffer has 90 days from April 2, 1982 to submit additional data to complete his petition. If he does not submit the required additional information, his petition will be returned without prejudice to his right to file a new petition.

not a party to the license amendment proceeding and therefore would not be entitled to invoke Section 2.802(d) in any event.

Mr. Jaffer's substantive argument appears to be that if his proposal were adopted, then "legal effect" would be given to telephone communications to "appropriate employees" of the Commission in public hearings in which such employees are involved. Mr. Jaffer apparently believes that adoption of such a proposal would then give "legal effect" to some communications made by him in the Turkey Point proceeding and thereby create a "jurisdictional defect in the license amendments" and presumably render them invalid. In neither his rulemaking nor his 2.206 petition is Mr. Jaffer clear as to the exact nature of the "legal effect" to be given to certain telephone calls or the jurisdictional defect which might result. If, however, the jurisdictional defect to which Mr. Jaffer refers is the failure to hold an evidentiary hearing at his request in the license amendment proceedings, that matter was, in effect, decided by the D.C. Circuit's October 2, 1981, decision, in *Jaffer v. NRC*. As the Commission noted in its Opposition to Petitioner's motion before the court, Mr. Jaffer never filed a petition to intervene in the license amendment proceeding; at most he filed a request to make a "limited appearance" statement pursuant to 10 CFR 2.715(a) if an evidentiary hearing were held. Despite Mr. Jaffer's apparent familiarity with the NRC's rules of practice, he did not exercise any opportunity to petition to intervene as described in those regulations. The Court concluded that Mr. Jaffer was not a party to the administrative proceeding. Given Mr. Jaffer's apparent familiarity with the Commission's regulations and the requirements for a petition to intervene at the time of the Turkey Point proceedings, he has offered no justification why his proposed rule, even if it were under consideration, should be applied retroactively to a completed licensing action. A potential party to agency proceedings must act affirmatively to protect his rights to participate; he may not await the outcome of a case and only then attempt to take part in the process. *Easton Utilities Commission v. Atomic Energy Commission*, 424 F.2d 847, 851-52 (D.C. Cir 1970) (*en banc*).

III.

Mr. Jaffer has provided no adequate basis for suspension of the license amendments for Turkey Point Units 3 and 4 authorizing steam generator repair. Consequently, his 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).

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland
this 5th day of May, 1982.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

Harold R. Denton, Director

In the Matter of

**Docket No. 50-244
(10 CFR 2.206)**

**ROCHESTER GAS AND ELECTRIC
CORPORATION
(R. E. Ginna Nuclear Power
Plant)**

May 22, 1982

The Director of Nuclear Reactor Regulation grants in part and denies in part a petition under 10 CFR 2.206. The petition was granted insofar as it requested a review of various safety issues to ensure that necessary actions to protect public health and safety were taken prior to resumed operation of the reactor. The petition's request for a formal order to require such a review and to prevent restart of the reactor was denied.

RULES OF PRACTICE: ISSUANCE OF ORDERS

The Director of NRR declined to formally order suspension of an operating license when such action was unnecessary to ensure that the licensee did not resume plant operation pending staff review and approval of resumed operation.

DIRECTOR'S DECISION UNDER 10 CFR SECTION 2.206

By a petition dated March 11, 1982 Ms. Ruth N. Caplan, Chairman, Sierra Club National Committee, requested that the Nuclear Regulatory Commission's Office of Nuclear Reactor Regulation require Rochester Gas and Electric Corporation (the licensee) to show cause why the operating license for the Ginna plant should not be suspended, or in alternative, why permission to restart the reactor should not be withheld, until such time as essential actions have been taken by the licensee and the Commission to assure the protection of public health and safety. This request has been considered under 10 CFR Section 2.206 of the Commission's regulations.

The petitioner requests that the Director of Regulation initiate a review of matters pertaining to the ability of the licensee to safely operate the Ginna plant so as to protect public health and safety in light of the January 25, 1982, steam generator tube rupture at the Ginna plant. The petitioner further requested that this review be incorporated into the review which was in progress by the staff at that time and that it should include, but need not be limited to several specific areas discussed in the petition. Pending completion of this review, the petitioner requested that the operating license for Ginna be suspended, or in the alternative, restart of the reactor should not be permitted.

I have reviewed the information submitted by Ms. Caplan and other relevant information bearing on the issues addressed in the petition.

I

The petitioner's request that the ongoing staff safety review include and consider the specific areas detailed in the petition is granted. Many of the specific issues are addressed in the staff's Safety Evaluation Report (NUREG-0916). A reference to NUREG-0916 or a discussion of each item follows.

Petitioner's Assertion and Request

1. The cause of the tube break initiating the January 25, 1982, accident should be thoroughly explained and corrective action taken to prevent such breaks in the future. The mechanical damage arising from loose pieces of metal should be studied in the context of the generic corrosion problems at Ginna. Specifically, corrosion arising from AVT (all volatile treatment) control of secondary water chemistry should be addressed in relation to denting of tubes, stress corrosion, and intergranular attack. This should include corrosion in the feed-water system and corrosive impurities introduced by condenser leaks.

Response:

These issues are discussed in Section 5.2, 5.3 and 5.4 of NUREG-0916.

Petitioner's Assertion and Request

2. The adequacy of the steam generator tube testing program should be evaluated and a determination made regarding the following issues:

- a. Is the routine multi-frequency eddy current testing method being employed at Ginna the best available given current state-of-the-art? If not, what justification is there for not employing the best available technology, in light of chronic tube degradation problems at Ginna and at other PWR's and the existence of techniques such as fiber optic examination?
 - b. Is the frequency of required testing of tubes sufficient to prevent future tube rupture or other serious break?
 - c. Does the current testing program, which only tests a sample of tubes and which does not test their full length, provide sufficient information to prevent tube failure?
3. The technical specifications defining the extent of allowable tube degradation for steam generator tube rejections should be reviewed in light of the Ginna accident to determine whether they are sufficiently stringent to prevent a tube break.
 4. The increased risk of steam generator tube breaks/leaks, if RG&E operates the reactor without having proceeded with the preventative sleeving program originally scheduled for the Spring, 1982, refueling outage, should be assessed and a determination made as to whether the original schedule should be adhered to.

Response:

These issues are addressed in Section 5.2.4 of NUREG-0916.

Petitioner's Assertion and Request

5. The safety implications of current and proposed plugging and sleeving of steam generator tubes and of further repairs such as insertion of stabilizing cables should be examined in order to assess additional stress, such as from changes in fluid dynamics, which may be induced in tubes remaining in use.

Response:

These issues are addressed in Section 5.5.8 of NUREG-0916.

Petitioner's Assertion and Request

6. An evaluation should be completed to determine the safety implications of operator action currently required to re-establish the instrument air system and to open the PORV manually.

Response:

This issue is addressed in Section 4.2.3 of NUREG-0916.

Petitioner's Assertion and Request

7. The safety implications of the failure of the PORV to close should be assessed in light of the problems which developed during the Ginna accident, particularly with regard to the creation of a steam bubble in the reactor vessel as a result of depressurization. The potential for uncovering the core, due to a steam bubble in the reactor vessel or elsewhere in the primary system should be addressed. A determination should be made as to whether safety functions performed by the PORV required that it be designated as safety grade and be required to meet all NRC regulations applicable to such safety grade designation, in order to assure safe operation of the reactor.

Response:

Current Commission policy does not require that the PORV and its solenoid operated air valves be designated to be safety grade equipment. The staff has a generic study underway to determine whether PORVs should be required to be safety grade. The PORVs at Ginna will be considered along with all others at the completion of that evaluation. Additional information regarding the installation and operation of the PORV and void formation are contained in Sections 3.3, 4 and 6.1 of NUREG-0916.

Petitioner's Assertion and Request

8. A determination should be made, given the demonstrated unreliability of the PORV, as to whether a reliable method exists for removing decay heat by means of the secondary system, without providing, at the very minimum, one pathway for removing decay heat which consists of safety grade equipment. Such determination should also

include an assessment of the reliability of essential auxiliary support systems such as instrument air, and should consider the consequences of loss of off-site power to determine whether General Design Criteria #17 of 10 CFR Part 50 Appendix A is met.

Response:

The ability of the installed systems at the Ginna plant to provide for a reliable method for removal of decay heat was assessed by the NRC staff. The results of that review are provided in a safety evaluation issued on September 29, 1981, as part of the Systematic Evaluation Program (SEP) review of Topic VII-3, "Systems Required for Safe Shutdown." A copy of that evaluation is attached.

Petitioner's Assertion and Request

9. A determination should be made as to whether the emergency operator procedures set forth in "Westinghouse Emergency Operator Guidelines for Steam Generator Tube Rupture Events" are adequate to protect the public health and safety. Operator delay, or apparent hesitancy, in terminating the HPI (high pressure injection) is of particular concern in relation to the risk of over-pressurization of the reactor pressure vessel as reported in the Speis memorandum (see *infra* #11) and to the increased reliance on proper functioning of steam generator safety valves. Further, the Ginna emergency procedures should be conformed to the Westinghouse guidelines.

Response:

Since the TMI-2 accident, the staff has been actively reviewing the Westinghouse Emergency Operator Guidelines for steam generator tube ruptures. While the original guidelines from which the Ginna procedures were developed did not specifically address the possibility of a stuck open PORV, the most recent guidelines issued by Westinghouse developed in response to TMI Action Plan item I.C.1 include the consideration of multiple failures, such as PORVs failing open. They also address the possible formation of voids in the reactor vessel. While we have not yet completed our review of these guidelines, we believe they are sufficiently complete that preliminary implementation can begin. We intend to advise the W Owners of this shortly.

With respect to the adequacy of the plant specific procedures in place at the Ginna plant today, the staff evaluation of these procedures is provided in Section 4.2 of NUREG-0916.

Petitioner's Assertion and Request

10. The conditions under which the reactor vessel can become over-pressurized in the course of operator action to control an accident should be clearly specified and a determination made as to whether an automatic response system would decrease the chance of over-pressurization problems from developing and whether the installation of such a system at Ginna is an action that "will provide substantial, additional protection which is required for the public health and safety" as provided in 10 CFR 50.109.

Response:

This issue is addressed in Section 4.2.9 of NUREG-0916.

Petitioner's Assertion and Request

11. The concerns raised in the Speis memorandum (Themis Speis to Roger Mattson, "Preliminary Evaluation of Operator Action for Ginna SG Tube Rupture Event" dated January 28, 1982, see *infra* Attachment E) regarding problems and potential problems in cooling the reactor following the tube break should be addressed; a determination made as to their safety significance; and necessary corrective action taken. These include the following problems:
 - a. the apparent stratification in the B steam generator and its effect on slowing depressurization of the faulted steam generator;
 - b. the consequence of an additional coolant system failure, including a leak in the A steam generator or "a secondary side safety/relief valve" sticking open;
 - c. the necessity to remove decay heat from the A steam generator by steaming to the atmosphere due to improper functioning of the condensor;
 - d. the problems associated with the use of the PORV for coolant discharge during "feed and bleed" cooling.

Response:

The issues raised by items a, b, and c are addressed in Sections 4.2.8, 4.2.11, 4.2.12 and 8.1 of NUREG-0916.

With regard to item d, had a leak developed in the second ("A") steam generator at Ginna, the need to institute the "feed and bleed" process to assure continued core cooling would have depended upon the leak size and total leak rate of primary coolant out of the primary system.

The staff has been evaluating the capability of operating plants to "feed and bleed" on a generic basis, although no detailed thermal-hydraulic analyses of feed and bleed have been performed for Ginna.

Limited detailed thermal hydraulic analyses have been performed by the industry however, which have shown that feed and bleed is calculated to effectively remove decay heat if sufficient HPI injection and PORV/safety valve relieving capacity is available. These analyses include (1) typical CE (e.g., Calvert Cliffs) plant; (2) B&W 177 FA plant; and (3) Sequoyah Plant (*W* design).

Recently, the staff evaluated the capability of all operating plants to "feed and bleed" based on each plant's HPI pump capacity and PORV/safety valve relieving capacity. Our evaluation of Ginna concluded that the Ginna plant design has sufficient PORV relieving capacity to depressurize the primary system to below the shutoff head (1475 psi) of the HPI pumps and sufficient HPI pumping capacity to remove decay heat. However, the staff points out that "feed and bleed" cooling is not a design requirement for the plant.

At Ginna, there are procedures in place which instruct the operator on how to reset the safety injection signal in order to enable reestablishing the air supply necessary for PORV operability. The procedure was, in fact, used in reestablishing instrument air which allowed the initial operation of the PORV at Ginna during the tube rupture event.

Additionally, there is a backup nitrogen system which is manually controlled from the control room which can be used to actuate the PORVs in the absence of normal instrument air.

Petitioner's Assertion and Request

12. A determination should be made as to the extent to which failure to implement the TMI Action Plan requirement for instrumentation to

allow direct measurement of the water level in the reactor vessel contributed to operator problems in determining proper timing for operating the ECCS pumps and in determining the size of the steam bubble.

Response:

There are several types of water level indication systems being considered by industry and the NRC staff with respect to assisting the operator in making determinations of inadequate core cooling. Some of these systems include level indication in the reactor vessel head region. Had such a measuring device been installed, it likely would have been an aid to the operator. The operators, however, did use the available instrumentation (pressurizer level, reactor coolant system pressure, and vessel upper head thermocouples) in making determinations of the existence of the steam bubble in the reactor vessel head. Furthermore, the core exit thermocouple readings in conjunction with the reactor coolant pressure confirmed that the steam bubble was confined to the reactor vessel head area and the operators took actions accordingly.

Petitioner's Assertion and Request

13. A full investigation should be made to determine the state of embrittlement of the Ginna reactor pressure vessel to determine the likelihood that over-pressurization will lead to vessel rupture as a consequence of pressurized thermal shock.

Response:

This issue is addressed in Section 3.5 of NUREG-0916.

Petitioner's Assertion and Request

14. The NRC should determine whether the reactor can operate safely without replacement of the steam generator and associated parts of the nuclear steam supply system and whether the newest Westinghouse steam generator design will ameliorate the problems, given the recent problems which have developed with this design at McGuire and at European reactors.

Response:

The issue of steam generator integrity and the results of our evaluation are addressed in Section 5 of NUREG-0916. Based on our conclusion, we see no need at this time to require replacement of the steam generator. We therefore consider no response necessary to the second part of this request.

Petitioner's Assertion and Request

15. The total projected worker exposure should be calculated in advance of NRC approval of RG&E's repairs and a specific plan developed to keep worker exposure as low as reasonably achievable (ALARA). This should include a determination as to whether time should be allowed for radioactive decay, particularly of Cobalt 58, in the steam generator prior to repairs, in order to prevent unnecessary worker exposure and still allow all necessary repairs to be made.

Response:

In the course of discussions between RG&E and the staff immediately after the event, the licensee estimated that the radiation exposure incurred in the steam generator inspection and repair would be approximately 300 to 350 person-rem. The licensee described his plans to keep exposures as low as reasonably achievable, which included the use of remotely operated tools, extensive pre-planning of evolutions, and practice on special mock-ups. Members of the regional staff closely monitored the repair efforts to ensure that exposure was kept to a minimum, and as a result, the total exposure incurred in the repair effort was 350 person-rem. The total exposure for the entire outage is expected to be approximately 600 person-rem, which is only slightly higher than the exposure which would be typical for an outage of this magnitude without the additional steam generator repair effort. This exposure is within the expected range for PWR outages.

Petitioner's Assertion and Request

16. An overall safety assessment should be performed before the reactor is allowed to re-start in order that the combined risk of potential failure modes can be determined, in relation to the protection of

public health and safety. At a minimum such an assessment should address the following:

- a. the degradation of the Ginna steam generators, including the plugging, sleeving and other repairs required to date and planned;
- b. the on-going contribution to tube degradation of corrosion arising from AVT control, from condenser leakage, and from the feed-water system (as apposed to the suspected damage from loose pieces of metal in the B steam generator);
- c. The lack of a safety grade pathway in the secondary system to remove decay heat;
- d. the chance that operator error will lead to over- or under-pressurization of the reactor vessel;
- e. the state of reactor vessel embrittlement.

Response:

This request is a summary of several previous items. NUREG-0916 provides a detailed evaluation of items a, b, d and e, along with an overall, integrated assessment of their safety significance. Specifically, Sections 1, 2 and 9 address the contribution by these items to the overall risk to the health and safety of the public posed by the Ginna facility. The SEP evaluation addresses item c. The staff has reviewed these individual assessments and concludes that the return to operation of the R. E. Ginna Nuclear Power Plant is acceptable.

II

The petitioner's request that the staff issue a formal order to suspend the Ginna operating license pending evaluation of safety issues bearing on restart of the facility has been denied. The issuance of a formal order was unnecessary to ensure that the licensee did not resume operation until the staff performed its safety evaluation and necessary steps were taken to ensure adequate protection of public health and safety. As a result of a meeting on February 10, 1982 between the staff and representatives of the licensee, and other subsequent discussion, Rochester Gas and Electric Corporation agreed to provide a complete evaluation of the event and a basis for restart of the Ginna plant. The licensee further agreed that this information would be submitted for review and approval by the staff prior to restart. This commitment was confirmed in a letter (copy attached) to the licensee from the Director of the Division of Licensing on February 24, 1982.

In light of this commitment by the licensee to delay restart until receipt of approval by the staff, the issuance of a show cause order or the suspension of the license was unnecessary. The Ginna plant has remained shut down pending approval by the staff for restart, and no formal action has been necessary to enforce the licensee's commitment.

A copy of this decision will be filed with the Secretary for the Commission's review in accordance with 10 CFR 2.206(c). As provided in this regulation, the decision will become the final action of the Commission twenty-five (25) days after issuance, unless the Commission, on its own motion, institutes review of the decision within that time.

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland,
this 22nd day of May, 1982.

Attachments:

1. NRC letter dtd. September 29, 1981 from D. Crutchfield to J. Maier, RG&E enclosing staff's evaluation related to Safe Shutdown Systems.
2. NRC letter dtd. February 24, 1982 from D. Crutchfield to J. Maier, RG&E relating to Ginna Steam Generator event evaluation and basis for restart.

[Attachments 1 and 2 have been omitted from this publication but are available in the NRC Public Document Room, 1717 H Street, N.W., Washington, D.C.]

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF INSPECTION AND ENFORCEMENT

Richard C. DeYoung, Director

In the Matter of

**Docket No. 50-293
(10 CFR 2.206)**

**BOSTON EDISON COMPANY
(Pilgrim Nuclear Station)**

May 28, 1982

The Director of the Office of Inspection and Enforcement denies a petition submitted by the Commonwealth of Massachusetts Executive Office of Energy Resources, requesting that moneys from a fine imposed on, and collected from the Boston Edison Company be turned over to it for use in a conservation/weatherization program.

NRC: JURISDICTION

The Commission's authority, limited primarily to areas of the public health and safety in regard to radiological concerns, is not so extensive as to permit the Commission to grant Massachusetts' request.

ATOMIC ENERGY ACT: CIVIL PENALTIES

Penalties imposed and collected by the Nuclear Regulatory Commission must be turned over to the U.S. Treasury.

DIRECTOR'S DECISION UNDER 10 CFR 2.206

On January 18, 1982 the Director, I&E proposed to impose a civil penalty of \$550,000 on the Boston Edison Company for several violations of NRC requirements associated with the operation of the company's Pilgrim nuclear power facility. Without waiting for a formal order imposing the penalty,¹ the company paid the penalty in full on March 19, 1982.

¹ See 10 CFR 2.205(b).

By letter dated March 18, 1982, as supplemented by a letter dated April 22, 1982, the Commonwealth of Massachusetts (through the General Counsel of its Executive Office of Energy Resources, Patrick J. Kenny, Esq., hereinafter "petitioner") has requested that instead of NRC collecting the \$550,000, the money be turned over to petitioner "to finance a home weatherization/conservation program".² The petitioner has in mind that "[c]ustomers within the service area of Boston Edison Company and other utilities which receive power directly from the Pilgrim I unit under long term contracts would be eligible for the benefits of the program."³

I have decided to treat the petition as a request for action under 10 CFR 2.206.⁴ For the reasons which follow the NRC lacks the requisite legal authority to take the action requested and the petition must be denied.

The Nuclear Regulatory Commission's authority to regulate nuclear activities while quite broad,⁵ is neither limitless nor unchanneled.⁶ Rather, the regulatory actions of this agency must be grounded in considerations of radiological health and safety and the common defense and security.⁷ The Commission is, thus, without authority to exercise regulatory powers for a purpose not fairly encompassed by its regulatory purposes.⁸

² Enclosure to letter of March 18, 1982, p.2.

³ *Ibid.*

⁴ The petition is not one which requests the institution of a proceeding for an enforcement action or for an investigation or for some other type of action normally embraced by 10 CFR 2.206. Nonetheless, it is closely related to an enforcement action and prior to its formal filing the petitioner had been informally advised by NRC that it could achieve a definitive resolution at its request by invoking the 2.206 process. It should be noted that petitioner's request is alternatively styled a "Petition to Intervene in Civil Penalty Proceeding". Apart from the fact that the petition fails to demonstrate any adverse effect upon petitioner from the NRC's civil penalty action, no "proceeding" exists into which intervention might be considered as the penalty has already been paid.

⁵ See, e.g., *Siegel v. Atomic Energy Commission*, 400 F.2d 778 (D.C. Cir. 1968) and *Public Service Co. of New Hampshire v. NRC*, 582 F.2d 77 (1st. Cir. 1978).

⁶ *New Hampshire v. AEC*, 406 F.2d 170, 175 (1st Cir.), *cert. denied*, 395 U.S. 911 (1969).

⁷ Section 2.e. of the Atomic Energy Act of 1954. The NRC also has limited authority to regulate in promotion of national antitrust policies (section 105 of the AEA) and, under the National Environmental Policy Act of 1969, is required to formally consider environmental matters in the course of reaching its major licensing decisions. It should be noted in this connection that the regulations of the Council on Environmental Quality specifically exclude enforcement actions such as that here involved from the definition of "Major Federal action". 40 CFR 1508.18(a) provides, in part, that:

"Actions do not include bringing judicial or administrative civil or criminal enforcement actions."

See also 10 CFR 51.5(d)(1) of the NRC's regulations.

⁸ *New Hampshire v. AEC supra* note 6. See also the Senate Report which accompanied the bill which became the Energy Reorganization Act. It is there stated that NRC was given "solely regulatory responsibilities, in keeping with a basic purpose of this Act [the ERA] to

(CONTINUED)

The petition here does not suggest that the action it wants the NRC to take is in any way related to radiological health and safety purpose of the civil penalty action taken here. There is in fact no rational connection between the fundamental regulatory purposes of the action taken against the Boston Edison Company and the petitioner's proposed program.

The petitioner seeks to avoid the effect of this legal impediment to its plan by asserting, without elaboration, that its plan "would enhance the deterrent and remedial effect of the civil penalty sanction."⁹ Contrary to this assertion, however, there is no basis for supposing that the "deterrent and remedial effect" could be in any way "enhance[d]" by the use made of the money collected. The impact on the company and those similarly situated licensees is created by having to pay the money. Indeed, it could perhaps better be argued that this impact would actually be *lessened* if the company could bask in a public perception that it was contributing money for the benefit of the surrounding community (for whatever reason). In all events, the legal bar remains. No rational connection exists between the advancement of the basic regulatory purpose of the enforcement action against Boston Edison and the petitioner's plan.¹⁰

There is another, separate legal bar to the NRC's participation in petitioner's plan. NRC lacks the legal authority to do anything other than transfer to the U.S. Treasury monies collected as civil penalties.¹¹ NRC could not legally evade this requirement through a scheme whereby penalties already paid to NRC would be remitted upon condition that they are paid to a person or entity other than the U.S. Treasury. This would be doing indirectly that which would be contrary to law if done directly, and as such, contrary to law also.

For the above reasons the petitioner's requests must be and are hereby *denied*.

separate the regulatory functions of the Atomic Energy Commission from its development and promotional functions, which are transferred to the ERDA." S. Rep. No. 980, 93rd Cong., 2nd Sess., reprinted in [1974] U.S. Code Cong. & Ad. News 5483.

⁹ Enclosure to April 22, 1982 letter, p. 15.

¹⁰ The petitioner attempts to support its request by citation to past actions by the Department of Energy, the Federal Trade Commission and the Civil Aeronautics Board. The cited actions are inapposite to the situation here. The Department of Energy case cited involved a specific statutory authorization for restitution of overcharges for oil. The two FTC cases and the CAB case all involved the use of funds to correct the specific practices which attracted the penalties in the first place.

¹¹ "[A]ll moneys received from whatever source for use of the United States . . . shall be paid by the officer or agent receiving the same into the treasury . . ." 31 U.S.C. 484. See also 10 CFR 2.205 (i) which requires civil penalties to be paid by "check, draft, or money order payable to the Treasurer of the United States".

A copy of his decision will be filed with the Secretary of the Commission for the Commission's review in accordance with 10 CFR 2.206(c).

Richard C. DeYoung, Director
Office of Inspection and Enforcement

Dated at Bethesda, Maryland
this 28th day of May, 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. 50-498 OL
50-499 OL

**HOUSTON LIGHTING AND POWER
COMPANY**

(South Texas Project,
Units 1 & 2)

June 18, 1982

Upon review of an Appeal Board decision (ALAB-672, 15 NRC 677 (1982)) disqualifying a member of the Licensing Board from further participation in this proceeding, the Commission, by majority vote, reinstates the member to the Board. The Commission finds that disqualification is neither required by law nor as a matter of policy in the circumstances involved.

RULES OF PRACTICE: DISQUALIFICATION

In the federal courts, disqualifying bias or prejudice of a trial judge must generally stem from an extra-judicial source. *United States v. Grinnell Corp.*, 384 U.S. 563, 583 (1966). The same standard applies to presiding officers in administrative proceedings. *Duffield v. Charleston Area Medical Center, Inc.*, 503 F.2d 512 (4th Cir. 1974).

RULES OF PRACTICE: DISQUALIFICATION

Preliminary assessments, made on the record, during the course of an adjudicatory proceeding — based solely upon application of the decision-maker's judgment to material properly before him in the

proceeding — do not compel disqualification as a matter of law. *Commonwealth Edison Co.* (LaSalle County Nuclear Power Station, Units 1 and 2), CLI-73-8, 6 AEC 169, 170 (1973). See also *United States v. Grinnell Corp.*, 384 U.S. 563, 583 (1966).

RULES OF PRACTICE: DISQUALIFICATION

Even under objective standard for recusal such as applies to federal judges under 26 U.S.C. §455(a) (which requires a judge to “disqualify himself in any proceeding in which his impartiality might reasonably be questioned”), the requirement for recusal is limited to extra-judicial conduct. See e.g., *In re International Business Machines Corporation*, 618 F.2d 923, 929 (2d Cir. 1980).

MEMORANDUM AND ORDER

This recusal proceeding was initiated by Citizens Concerned About Nuclear Power's (“CCANP”) motion requesting Judge Hill to recuse himself for two reasons: (1) alleged personal bias against CCANP; and (2) inherent bias arising from his prior employment at Lawrence Livermore National Laboratory. Both the Applicants and the NRC staff opposed the motion. Judge Hill declined to recuse himself, and in a Memorandum and Order, dated April 13, 1982, the other two Board members denied the motion, finding it “totally to lack merit.” (Memorandum and Order, pg. 2). In a separate statement attached to the Licensing Board's Order, Judge Hill made several statements regarding CCANP's intentions and behavior as an intervenor in this proceeding.

Because Judge Hill was not recused from the Licensing Board, CCANP's request was referred automatically to the Appeal Board. 10 CFR 2.704(c). Recognizing that another hearing session was scheduled to begin shortly, the Appeal Board initially issued an Order without the usual opinion. In that Order, the Appeal Board unanimously found that: “several of the comments contained in his [Judge Hill's] separate statement give rise to a serious doubt respecting Judge Hill's present ability to judge CCANP and its assertions in this proceeding dispassionately.” Accordingly, the Appeal Board concluded that Judge Hill should be replaced by another member of the Licensing Board Panel.

On April 21, 1982 the Appeal Board, in ALAB-672, 15 NRC 677 (1982), explained its decision to disqualify Judge Hill. Essentially, the Appeal Board found that certain language in Judge Hill's written statement demonstrates a lack of sensitivity for the role of a judge and would permit an objective observer to reasonably infer that Judge Hill has a

personal animus against CCANP which could affect his ability to pass objectively on the issues in this case.

The Applicants, Houston Power and Light, et al., petitioned the Commission to review the Appeal Board's Order on an expedited schedule. CCANP believed that review should be conducted at a more deliberate pace; the NRC staff supported expeditious review. After due consideration the Commission decided to review on an expedited basis the disqualification of Judge Hill. The issues specified for review were:

1. Did the Appeal Board apply the correct legal standard in determining to disqualify Judge Hill; and
2. Did Judge Hill's separate statement constitute evidence of bias or prejudice warranting his disqualification?

We have now received briefs from the parties. The Applicants believe that the answers to both questions are no. CCANP and Citizens for Equitable Utilities (CEU) believe that the answers are both yes. The staff believes that the Appeal Board's legal standard was neither entirely clear nor the most appropriate and that Judge Hill's statement does not require his recusal as a matter of law. The Commission has considered the views of the parties and, for the reasons discussed below, has determined to reinstate Judge Hill.

In the federal courts, disqualifying bias or prejudice of a trial judge must generally be extra-judicial. As the Supreme Court has held, "the alleged bias and prejudice to be disqualifying must stem from an extrajudicial source and result in an opinion on the merits on some basis other than what the judge has learned from his participation in the case." *United States v. Grinnell Corp.*, 384 U.S. 563, 583 (1966). See also *In Re International Business Machines Corporation*, 618 F.2d 923, 927 (2d Cir. 1980) ("IBM"). The same standard applies to presiding officers in administrative proceedings. *Duffield v. Charleston Area Medical Center, Inc.*, 503 F.2d 512 (4th Cir. 1974). Indeed, the Commission has expressly adopted this rule, holding that "Preliminary assessments, made on the record, during the course of an adjudicatory proceeding — based solely upon application of the decision-maker's judgment to material properly before him in the proceeding — do not compel disqualification as a matter of law," and citing with approval *United States v. Grinnell Corp.*, *supra*. *Commonwealth Edison Company* (La Salle County Nuclear Power Station, Units 1 and 2), CLI-73-8, 6 AEC 169, 170 (1973).

* The same positions were taken in an amicus brief lodged by the Atomic Safety and Licensing Board Panel (Panel). We have accepted that brief and the parties' comments on it. Accordingly, CEU's and CCANP's motion to strike or reject the Panel's amicus brief are denied.

These principles apply to this case. Judge Hill's statement was made in the context of an adjudicatory hearing and was based solely on events which occurred during that proceeding, i.e., CCANP's action and behavior during the proceeding. Since Judge Hill's statement did not stem from an extra-judicial source, but was based solely on what he learned from his participation in the case, that statement does not provide a legally cognizable basis for disqualifying prejudice. *IBM, supra*, at 928.

CCANP and CEU believe that even if Judge Hill's statement was not extra-judicial, it was judicial conduct demonstrating such pervasive bias and prejudice as would constitute bias against a party. Although some courts have stated such an exception to the general rule that bias must be extra-judicial, courts have been hesitant to invoke that exception except in the most extreme cases. *E.g., United States v. Ritter*, 540 F.2d 463 (10th Cir. 1976) (per curiam), *cert denied*, 429 U.S. 951 (1976). For example, the United States Court of Appeals for the Second Circuit recently noted that it has never disqualified a judge on the basis of *judicial* conduct. *IBM, supra*, at 928 n.6. The Court observed that a judge is more than a passive observer in a case involving a technical and complex field; he must penetrate through the parties' posturing to decide the accuracy of their presentations. Thus, extra-record conduct such as stares, glares and scowls do not constitute evidence of personal bias. *IBM, supra*, at 928-930. Similarly, occasional outbursts toward counsel during a long trial do not provide any basis for finding judicial bias against the party represented by counsel. *IBM, supra*, at 932. Judge Hill's statement clearly distinguishes between CCANP and the conduct of its representatives. We find that Judge Hill's statement does not constitute judicial behavior warranting an exception to the rule that bias must be extra-judicial. *Phillips v. Joint Legislative Committee on Performance and Expenditure Review of the State of Mississippi*, 637 F.2d 1014, 1020 (5th Cir. 1981); *Whitehurst v. Wright*, 592 F.2d 834, 838 (5th Cir. 1979).

Finally, CCANP and CEU would have us disqualify Judge Hill under the "reasonable factual basis - reasonable person" test applicable to federal judges under 28 U.S.C. § 455(a). *Cf. Nuclear Engineering Company, Inc.* (Sheffield, Illinois, Low-Level Radioactive Waste Disposal Site), ALAB-494, 8 NRC 299, 303 (1978). Section 455(a) requires a judge to "disqualify himself in any proceeding in which his impartiality might reasonably be questioned." This section establishes an objective standard for recusal, i.e., whether a reasonable person knowing all the circumstances would be led to the conclusion that the judge's impartiality might reasonably be questioned. *Fredonia Broadcasting Corporation, Inc. v. RCA Corporation*, 569 F.2d 251, 257 (5th Cir. 1978). CCANP and CEU believe that the Appeal Board's decision demonstrated that reasonable

persons can reasonably question Judge Hill's impartiality. Thus, they contend that Judge Hill must reconsider his decision not to recuse himself in light of ALAB-672. We disagree.

The same policy reasons which limit disqualification to extra-judicial conduct have been held to similarly limit recusal under Section 455(a). *IBM, supra*, at 929; *Johnson v. Trueblood*, 629 F.2d 287, 291-92 (3rd Cir. 1980); *Phillips, supra*. The Appeal Board's reaction to Judge Hill's statement does not change that statement's judicial character. Under these circumstances, we find no reason to seek Judge Hill's reconsideration of his decision not to recuse himself.

For these reasons, we have concluded that Judge Hill's statement did not legally require his disqualification. Moreover, we are not inclined to order recusal as an exercise of our discretionary supervisory authority over pending adjudications. The proceeding is now well along and the judge has acquired a valuable background of experience. *See, IBM, supra*, at 934. We are convinced that Judge Hill will in fact deal fairly with CCANP in this proceeding. Accordingly, Judge Hill is hereby reinstated to the Licensing Board for this proceeding.

Commissioners Gilinsky and Asselstine dissented from this decision.

The Additional Views of Commissioners Ahearne and Roberts, Separate Views of Commissioner Gilinsky, and Dissenting Opinion of Commissioner Asselstine are attached.

It is so ORDERED.

For the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, DC,
this 18th day of June, 1982.

ADDITIONAL VIEWS OF COMMISSIONER AHEARNE

As Commissioner Gilinsky points out, the Commission previously addressed the issue of disqualification in LaSalle.¹ I agree with the general

¹ *Commonwealth Edison Company* (LaSalle County Nuclear Power Station, Units 1 and 2), ALAB-102, 6 AEC 68 (1973); *Commonwealth Edison Company* (LaSalle County Nuclear Power Station, Units 1 and 2), CLI-73-8, 6 AEC 169 (1973).

approach established there. As the Appeal Board said in the LaSalle case, "The starting point of our inquiry necessarily is the context in which [the Licensing Board member's] statements were made. For, manifestly, the question as to whether those statements constitute a basis for his disqualification cannot be fairly decided by examining their content in isolation."² In disagreeing with the LaSalle Appeal Board's conclusion, the Commission added "At the outset we are inclined to give due deference to the judgment of the other Licensing Board members. Those members—because they saw and heard the incident—can assess the matter with full appreciation of what appears in a cold record."³ Similarly, in this case I am inclined to defer to the Licensing Board.⁴

In addition the Board's conclusion is not inconsistent with a brief review of the "cold record." I did not see indication of bias in the portions of the transcript I reviewed. A look at the transcripts for Board proceedings held during December 1981, January 1982, and February 1982 identified only three sections in which Judge Hill is identified as speaking. In one instance he asked the staff a few questions about its knowledge of turnover of personnel.⁵ The second time, he entered a discussion concerning an objection made by the applicant's lawyer to cross-examination by CCANP's representative. Judge Hill sided with CCANP.⁶

Finally, he engaged in the line of questioning cited by the intervenor:⁷

Judge Hill:

"Considering the results of this investigation, do you feel that the four allegations that were made justified the 90 hours of investigative time?"

NRC Witness Phillips:

"The NRC's threshold sometimes is perhaps one some persons could deem as being relatively low. And some persons could say 'Well, you know, that time was really not justified.'

"However, by the same token, since we are charged with the responsibility of protecting the health and welfare of the public, in

² ALAB-102 at 69.

³ CLI-73-8 at 170.

⁴ Although the Licensing Board focused on the CCANP motion, the other two members clearly had Judge Hill's remarks before them when they reached their decision. See "Memorandum and Order (Denying CCANP Motion for Judge Ernest Hill to Recuse Himself)" at 4 (April 13, 1982).

⁵ Tr. 9532-35 (January 20, 1982).

⁶ Tr. 9739-44 (January 20, 1982).

⁷ Tr. 10362-64 (February 10, 1982).

terms of their safety adjacent to nuclear sites and living in the area, I think if we do take things to a final conclusion and close doors, that it does have a real benefit, if for no other reason than to demonstrate that we do take things to resolution and that we try to get all the way down to the bare bones on a safety issue to assure that there's nothing wrong.

"So it does have some value, even though you end up with no findings."

Judge Hill:

"This is not in the form of a question, but I guess a final statement; that's fine, except that you're dealing with finite and limited resources in your organization, and I guess that's my comment on that."

On the other hand, I found less than persuasive arguments such as:

"Besides, Judge Hill's use of the word *subvert* provides an extrajudicial source for a most significant part of his statement and for his motivation in saying what he did. An institution which collects and maintains intelligence files on nuclear critics has a prejudicial attitude toward such critics. Judge Hill's use of the word *subvert* demonstrates he was infected by this attitude apart from anything CCANP said or did in the hearings."⁸

"The link between Judge Hill's use of the word *subvert* and the intelligence gathering activities of his employer is clearly warranted. CCANP at 17, 20-21. Intelligence gathering is normally directed at those perceived as a dangerous threat to the existing system of government, whether the target be dissidents in Russia or Nazis in the United States. It would be difficult for Judge Hill to spend the majority of his working hours at an institution engaged in such activity and not be infected by such an attitude."⁹

Consequently, the Licensing Board decision, a review of the transcripts, a reading of the briefs, and examination of the previous Commission case reinforces my support for the Commission's decision.

⁸ "Intervenor Citizens Concerned About Nuclear Power's Initial Brief in Response to Nuclear Regulatory Commission Order of May 6, 1982" at 17 (May 18, 1982). In his separate statement Judge Hill had said "From the outset, the representatives for CCANP have in many instances actively subverted the stated objectives of this expedited proceeding by being unduly contentious with matters having little, if any, bearing on the admitted contentions." Board Memorandum and Order at 9-10 (Separate Statement of Judge Hill).

⁹ "Intervenor Citizens Concerned About Nuclear Power's Reply Brief in Response to Nuclear Regulatory Commission Order of May 6, 1982" at 9 (May 29, 1982).

ADDITIONAL VIEW OF COMMISSIONER ROBERTS

I disagree with Commissioner Gilinsky's view that the NRC Staff should not litigate procedural matters in NRC adjudicatory proceedings and I do not believe his view is shared by a majority of the Commissioners. Under the Commission's rules, the NRC Staff is a full party to the proceeding and on an equal footing with all other parties. *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), ALAB-138, 6 AEC 520, 532 (1973). This "party" status entails certain rights and certain duties. *Pennsylvania Power and Light Co.* (Susquehanna Steam Electric Station, Units 1 and 2), ALAB-613, 12 NRC 317, 338-40 (1980). "In short, the right of participation in an administrative proceeding carries with it the obligation of a party to assist in 'making the system work' and to aid the agency in discharging the statutory obligations with which it is charged." *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-123, 6 AEC 331, 332 (1973). One obligation imposed on parties is the duty to advance correct and proper interpretations of applicable law to assist the judge in making his decision. A party that does not participate in this fashion is in default. The very process of adjudication imposes on all parties this affirmative responsibility to assist the decisionmaker.

Moreover, the correct and proper application of procedural rules and pertinent case law is in the interest of every party. Such application results in a predictable and fair process. Additionally, such application enhances the efficiency of an adjudicatory proceeding, both in terms of the length of the proceeding and in terms of the commitment of a party's resources to the proceeding.

More important than these considerations of "party" status, however, is the Staff's status as an arm of the Commission and as the principal instrumentality through which the Commission carries out its regulatory responsibilities. *Public Service Co. of New Hampshire* (Seabrook Station, Units 1 and 2), CLI-76-17, 4 NRC 451 (1976). In this role, the Staff is charged with the more weighty responsibility of advancing the correct interpretation of the Commission's regulations. See *Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant, Units 1, 2, 3, and 4), ALAB-577, 11 NRC 18, 24-25 (1980). Those rules which are procedural (indicating *how* the Commission wishes its adjudicatory proceedings to be conducted) are no less important than other Commission regulations. Thus, it is as incumbent upon the Staff to advance the correct interpretation of Commission procedural rules and applicable case law as it is incumbent upon them to advance the correct interpretation of Commission substantive rules.

With regard to Commissioner Asselstine's suggestion that the Commission adopt a higher standard of performance for its licensing board members than that imposed on Federal judges by the Supreme Court, I note that the proposed higher standard appears analogous to proving a negative. One must demonstrate that the person questioning the impartiality of the judge is not reasonable. Additionally, it is not clear to me that the higher standard will eliminate the *appearance* of bias, the goal of Commissioner Asselstine's proposal. Whether there is bias or an appearance of bias on the part of a judge is a fact question best resolved by a review of the facts. My review of the facts leads me to conclude that Judge Hill should not be disqualified for the appearance of bias.¹

In light of the considerable debate which has surrounded Judge Hill's use of the word "subvert" in his statement on recusal, I append the following Appeal Board analysis from an earlier decision:

The failure of both the Saginaw and Mapleton Intervenors to file adequate proposed findings of fact and conclusions of law highlights what we view as an area of concern in the functioning of the adjudicatory process in Commission licensing proceedings—*i.e.*, the role of intervenors. Intervenors frequently enter Commission licensing proceedings, including this one, with broad and far-ranging contentions. They have been afforded, and have utilized, the full range of the Commission's discovery procedures. But, even after obtaining a plethora of information through discovery, they have presented limited direct evidence and have often confined their evidentiary cases to the conduct of cross-examination. In this proceeding, they affirmatively failed to file adequate proposed findings and conclusions, even though they were asked by the Licensing Board to do so. Now, after the Licensing Board has issued a decision with which they disagree in many respects, they file exceptions with this Board which challenge, *inter alia*, numerous factual findings of the Licensing Board.

Participation in this manner, in our opinion, *subverts* the entire adjudicatory process.²

With this analysis in mind, it is ironic that Judge Hill's conclusion that dilatory legal tactics subvert the adjudicatory process formed the basis of an Appeal Board decision to disqualify him from the *South Texas* proceeding.

¹ The Staff's brief analyzed this fact question very well. "NRC Staff's Brief on Recusal of Judge Hill." May 21, 1982, pp. 14-17.

² Consumers Power Co. (Midland Plant, Units 1 and 2), ALAB-123, 6 AEC 331, 332 (1973).

COMMISSIONER GILINSKY'S SEPARATE VIEWS

I would have affirmed the Appeal Board's decision. I agree with the Appeal Board's conclusion that, by responding as he did, Judge Hill created the impression that he harbors a deep-seated personal hostility towards CCANP and its representatives, which could be expected to affect materially his future determinations on matters of concern to that intervenor.

To my knowledge, this is only the second time that the Appeal Board has removed a Licensing Board member from a proceeding.¹ The Commission would do well to follow the Appeal Board's advice in this type of case if it wishes to retain the public's respect for our proceedings.

As a final matter, I am troubled that the NRC staff persists in litigating matters in our proceedings in which it has no legitimate interest. In the present case, the staff merely filed a lukewarm brief, arguing that Judge Hill should be reinstated. But their position on the merits is beside the point. The staff had no business litigating this procedural issue. The proper parties to raise this matter are the intervenors and the applicant. The proper authorities for deciding it are the Appeal Board and the Commission.

DISSENTING OPINION OF COMMISSIONER ASSELSTINE

SUMMARY

I agree with the majority opinion in this proceeding that Judge Hill's written statement in response to the CCANP motion requesting that he recuse himself did not legally require his disqualification, as the applicable standards for disqualification have been interpreted by the courts thus far. However, I would adopt, as an exercise of the Commission's discretionary supervisory authority over this agency's adjudicatory proceedings, a different standard for the disqualification of Licensing Board members.

Specifically, I would disqualify a Licensing Board member if a reasonable person, knowing all the circumstances, would reach the conclusion that the Licensing Board member's impartiality — that is, his or her

¹ The first such case was *Commonwealth Edison Company* (LaSalle County Nuclear Power Station, Units 1 and 2) CLI-73-8, 6 AEC 169 (1973) in which the Commission reversed the Appeal Board's determination that a Licensing Board member should be disqualified for prejudging an issue in contention.

ability to pass judgment on the merits of the case in a fair and impartial manner — might reasonably be questioned. Unlike the majority, I would apply this “reasonable factual basis - reasonable person” test to statements made by a Licensing Board member arising from “judicial” as well as “extrajudicial” matters.

Applying this standard to Judge Hill’s written statement in response to the CCANP motion that he recuse himself, I reach the same conclusion as did the Appeal Board in ALAB-672 — that “Judge Hill affirmatively created the impression that he harbors a deep-seated personal hostility towards CCANP and its representatives, which could be expected to affect materially his future determinations on matters of concern to that intervenor.” (15 NRC 683). Based upon this conclusion, I would direct that another member of the Licensing Board panel be designated to replace Judge Hill in this proceeding.

DISCUSSION

The majority opinion ably summarizes the standards that have been applied by the courts for disqualifying bias or prejudice of a federal trial judge. As the majority opinion notes (p. 1365), the courts have applied the same standards to presiding officers in administrative proceedings. One of the standards for disqualifying bias or prejudice identified in the majority opinion is the “reasonable factual basis - reasonable person” test (p. 1366). Under this test, a judge or presiding officer would be disqualified if a reasonable person, knowing all the circumstances, would reach the conclusion that the judge’s or presiding officer’s impartiality might reasonably be questioned. *Fredonia Broadcasting Corporation, Inc. v. RCA Corporation*, 569 F.2d 251, 257 (5th Cir. 1978). This test is, in all essential elements, the standard for disqualifying bias applied by the Appeal Board in ALAB-672 (15 NRC 681-82).

Many of the cases establishing and applying standards for disqualifying bias or prejudice that are relied upon by the majority (pp. 1365-1367) draw a distinction between statements of a “judicial” nature — that is, statements based upon matters coming before the judge or presiding officer during the course of the proceeding — and statements of an “extra-judicial” nature — that is, statements based upon information acquired prior to, or outside the scope of, the proceeding. According to these cases, and other cases cited in the applicant’s brief (pp. 5-10), the NRC staff’s brief (pp. 6-12), and the amicus brief of the Atomic Safety and Licensing Board Panel (pp. 3-6), as a general rule, disqualifying bias or prejudice must be based upon extra-judicial matters.

As the majority opinion notes (p. 1366), the courts have made exceptions to this general rule that bias must be extra-judicial only in extreme cases, typically upon a finding of "pervasive bias and prejudice". See *United States v. Gregory*, 656 F.2d 1132, 1137 (5th Cir. 1981); *Davis v. Board of School Comm'rs-of Mobile County*, 517 F.2d 1044, 1051 (5th Cir. 1975), cert. denied, 425 U.S. 944 (1976). This distinction between the judicial or extra-judicial nature of the statement or conduct in question forms the foundation for the majority's conclusion that Judge Hill's written statement in response to the CCANP motion for recusal does not *legally* require his disqualification because that statement was based upon judicial rather than extra-judicial considerations.

Taken to its logical conclusion, the majority opinion stands for the proposition that even if a disinterested observer were to conclude that a Licensing Board member's conduct or statements were sufficient to create a reasonable doubt regarding the Board member's ability to act fairly and impartially on matters before the Board, this would not be a sufficient basis for disqualification so long as the Board member's conduct or statements were related to matters within the proceeding. In my view, the adoption of this standard by the Commission majority sends an unfortunate signal to the Licensing Boards and to the public — a signal that serves to undermine public confidence in the objectivity of our adjudicatory proceedings. I believe that the Commission has the discretionary authority to impose a higher standard of conduct for Licensing Board members than this,¹ and I believe there are strong public policy reasons for doing so.

Chief among these public policy reasons is the need to assure public confidence in the integrity and impartiality of the licensing process. The Commission has long recognized the "fundamental importance of meaningful public participation in our adjudicatory process."² As the Commission emphasized in *Prairie Island*, "such participation performed in the public interest, is a vital ingredient in the open and full consideration of licensing issues and in establishing public confidence in the sound discharge of the important duties which have been entrusted to us."³

Indeed, the essential purpose of the Commission's adjudicatory licensing proceedings is to provide a fair and objective resolution of factual and legal issues in dispute among the parties to the proceeding, including valid

¹ The NRC Staff's brief (p. 13) expressly recognized the Commission's discretionary authority to adopt a higher standard of conduct than that required by the courts. A higher standard of conduct was also proposed by Commissioner Ramey in *Commonwealth Edison Company* (La Salle County Nuclear Power Station, Units 1 and 2), CLI-73-8, AEC 169, 170, n.4 (1973).

² *Northern States Power Company* (Prairie Island Nuclear Generating Plant, Units 1 and 2), CLI-75-1, 1 NRC 1, 2 (1975).

³ *Id.*

contentions advanced by members of the public. I can think of no more important element in providing a fair and meaningful opportunity for public participation in our adjudicatory process than avoiding even the appearance of bias or partiality on the part of those who are charged with conducting these proceedings. Therefore, in order to ensure a fair opportunity for public participation and to promote public confidence in the objectivity of our licensing process, I would have the Commission apply a different standard for the disqualification of Licensing Board members than that adopted by the majority in this case. Specifically, I would disqualify a Licensing Board member if a reasonable person, knowing all the circumstances, would reach the conclusion that the Licensing Board member's impartiality — that is, his or her ability to pass judgment on the merits of the case in a fair and impartial manner — might reasonably be questioned. I would apply this standard regardless of whether the conduct or statements of the Licensing Board member giving rise to the allegation of bias are judicial or extra-judicial in nature. This is essentially the same standard for disqualifying bias applied by the Appeal Board in ALAB-672 (15 NRC 681-82).

Applying this standard to the facts of this case, I believe that a reasonable person would conclude from the totality of the circumstances that Judge Hill's written statement in response to the CCANP recusal motion raises serious questions regarding his ability to pass judgment on the merits of the issues before the Board in a fair and impartial manner. My review of Judge Hill's written statement, including the context in which that statement was made, leads me to conclude, as did the Appeal Board in ALAB-672, that through his separate statement, "Judge Hill affirmatively created the impression that he harbors a deep-seated personal hostility towards CCANP and its representatives, which could be expected to affect materially his future determination on matters of concern to that intervenor." (*Id.* at 683). As the Appeal Board found, Judge Hill's statement consisted of a series of direct attacks on the representatives of CCANP "cast for the most part in extremely pejorative terms." (*Id.* at 681-82). I also agree with the finding of the Appeal Board that Judge Hill's intemperate attacks on the representatives of CCANP were unnecessary to address the CCANP motion for recusal. In that regard, I am unpersuaded by the efforts of the Atomic Safety and Licensing Board Panel (*amicus* brief, pp. 13-14) to rationalize and explain Judge Hill's remarks as "a reasonable effort" to respond to the allegations in the CCANP motion for recusal.

Nor can Judge Hill's statement be explained on the basis of the Licensing Board's responsibility for the efficient conduct of the proceeding. The Licensing Boards have ample authority to manage these proceedings,

and to control the conduct of parties to the proceeding, without resort to the approach taken by Judge Hill in this case. See NRC Statement of Policy on Conduct of Licensing Proceedings, CLI-81-8, 13 NRC 452, 454 (1981). Finally, I agree with the Appeal Board that the intemperate and pejorative nature of Judge Hill's attacks take on added significance because they appear in a written statement. Judge Hill's written statements, made after the opportunity for careful consideration and reflection, stand in a different light than do the occasional intemperate oral remark of a judge against a litigant during the course of conducting a hotly contested adjudicatory proceeding.

Given the totality of these circumstances, I believe that a reasonable person would conclude from Judge Hill's statement that there is reason to question his ability to pass judgment objectively on matters of concern to CCANP.⁴ For this reason, I would replace Judge Hill in this proceeding with another member of the Licensing Board Panel.

One final point deserves brief mention. The Commission majority argues against imposing a higher standard of conduct for Licensing Board members in this case because the proceeding is now well along and Judge Hill has acquired a valuable background of experience (p. 1367). The applicant also argues against disqualifying Judge Hill in this case based upon the experience he has gained in observing the testimony presented to the Licensing Board. (Applicant's brief, pp. 14-15). Although this is an important consideration, I believe it is far outweighed by the public policy considerations in assuring public confidence in the objectivity and impartiality of our licensing process.

⁴ Although arguing against disqualification, the NRC staff itself recognized that "Judge Hill's statements are extremely unfortunate in terms of the public perception of the hearing process." NRC staff brief, p. 18.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

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

In the Matter of

Docket No. 50-3950L

**SOUTH CAROLINA ELECTRIC AND
GAS COMPANY, et al.**

(Virgil C. Summer
Nuclear Station, Unit 1)

June 22, 1982

The Commission, by 3-1 vote, declines to review an Appeal Board memorandum (ALAB-663, 14 NRC 1140 (1981)), in which the Board set out the reasons for its previous order denying a petition for directed certification filed by the NRC staff seeking interlocutory review of a determination by the Licensing Board to invoke the assistance of several independent consultants on certain seismic issues raised in this operating license proceeding.

ORDER

The Commission by a vote of 3-1, with Commissioner Gilinsky disapproving, has declined to review the Appeal Board decision (ALAB-663, 14 NRC 1140) in this docket. The time provided by NRC regulations within which the Commission may act to review has expired. Accordingly, the decision became final agency action on May 14, 1982. The separate views of individual Commissioners follow.

It is so ORDERED.

For the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.
this 22nd day of June, 1982.

SEPARATE VIEWS OF CHAIRMAN PALLADINO

I strongly disagree with Commissioner Gilinsky's view that the standard prescribed by the Appeal Board in ALAB-663 "will serve only to hobble the Licensing Boards." That standard, which centers directly on the Board's ability to reach an "informed decision," can hardly be fairly characterized as intended "to hobble," in my opinion. Furthermore, Commissioner Gilinsky ignores that the Boards were directed in ALAB-663 not to sacrifice anything of significance in the way of health and safety bases for their decisions. As the Appeal Board said:

"We certainly do *not* suggest that a licensing board should ignore deficiencies in the staff's analysis and testimony or play no role in the development of a complete record. The protection of the public health and safety is a paramount concern. Thus, as we have noted previously, it is a licensing board's right and obligation 'to satisfy itself that the conclusions expressed by expert witnesses on significant safety or environmental questions have a solid foundation.' Our point is simply that the adjudicatory boards should give the staff every opportunity to explain, correct, or supplement its testimony *before* resorting to outside experts of their own. Moreover, the boards' use of such consultants should be based on more than intuition and vague doubts about the reliability of the staff's presentation: the boards must articulate good reason to suspect the validity and completeness of the staff's work. That is what we meant in requiring a demonstration 'beyond question that a board simply cannot otherwise reach an informed decision on the issue involved.'

"The Licensing Board stated that it did 'not see how that standard can ever be satisfied.' We, of course, disagree. If the staff is unable or unwilling to clarify its testimony on a significant safety issue and the other evidence of record is similarly unresponsive to a licensing board's articulated concerns, the board is free

under our standard to seek outside testimony in an effort to resolve the matter. . . ." ALAB-663, 14 NRC 1140, 1156-1157 (citations and footnote omitted).

Commissioner Gilinsky wants the Commission to review ALAB-663 because he disagrees with the Appeal Board standard. I believe that standard is consistent with Commission policy, and I do not disagree with it. Therefore, I would not vote to review.

SEPARATE VIEWS OF COMMISSIONER AHEARNE

Commissioner Gilinsky obviously has a different view of the events than I do. And, of course, he is entitled to interpret them as he wishes. However, I would like it recorded that I believed the Licensing Board to be wrong. A reading of the transcripts of the Licensing Board's announcements that it was calling witnesses, the method of responding to the Appeal Board, and the procedures followed by the Licensing Board all evidence a belief that the Licensing Boards should conduct an independent technical review. Perhaps Commissioner Gilinsky believes they should. I do not—I believe they are to resolve issues in dispute, using first the resources of the parties. I believed the Appeal Board was placed in an unusual position and tried its best to maintain some rationality in the NRC licensing process.

Therefore, to at least indicate Commissioner Gilinsky's views are not shared by all Commissioners, please include these views with his.

SEPARATE VIEWS OF COMMISSIONER ROBERTS

Commissioner Roberts concurs in the separate views of Commissioner Ahearne. Additionally, Commissioner Roberts notes that he wished to affirm summarily but was advised by General Counsel that briefs should be requested.

SEPARATE VIEWS OF COMMISSIONER GILINSKY

The Commission should have taken review of this Appeal Board decision. By setting up a new and nearly insurmountable threshold for when a Licensing Board may call its own witnesses, the Appeal Board has tried to limit the authority of the Licensing Boards and reduce their role to that

of a blinkered referee. If the Commission wishes to thus constrain its Licensing Boards, it should say so itself, rather than by proxy.

This matter arose during the course of the Summer operating license hearing. The Licensing Board was uncomfortable with the "state-of-the-art modeling techniques" employed by the NRC staff and the applicant in their seismic analyses of the Summer site. During the week of July 6, 1981, the Licensing Board indicated that it wished to retain a number of experts in the seismic field, who would appear as its own witnesses, to help it understand these analyses.

The applicant did not oppose this proposal. However, the NRC lawyers, protecting the staff's bureaucratic interests, objected vociferously and demanded that the Appeal Board take interlocutory review of the case. This set in motion a chain of events that has resulted in a colossal waste of time and effort.

The NRC lawyers should not have taken this course. They had no legitimate interest in excluding these witnesses and, in any event, the case could have been decided more expeditiously if the Licensing Board had simply been allowed to go forward. This legal maneuvering reinforces my view that the NRC staff should not be a formal party to licensing proceedings and that it should be limited to serving as an advisor to the Boards.

The NRC adjudicatory boards' handling of the case was no better. On August 10, 1981, the Appeal Board ordered the Licensing Board to explain its reasons for calling its own witnesses. The Licensing Board responded on the same day. On August 25th, the Appeal Board said that interlocutory review might be warranted but delayed ruling on the staff's petition because it wanted to give the staff an opportunity to file supplemental testimony.

On August 27th, the Appeal Board published another memorandum in which it again declined to rule on the staff's petition. However, the Appeal Board discussed the issues at some length and stated that the Licensing Board should call independent witnesses 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." From the discussion, it is clear that the Appeal Board strongly doubted that this standard could be met by the Licensing Board.

In the meantime, the experts selected by the Licensing Board prepared their reports, which the Licensing Board issued to the parties during September, 1981. However, the Board's experts were not yet called upon to testify before the Board. On October 2, the Appeal Board directed the Licensing Board not to call its independent consultants to the stand as witnesses until it had furnished the Appeal Board with a detailed state-

ment of its reasons for doing so and until the Appeal Board had ruled on the staff's motion for directed certification.

On October 15, the Licensing Board issued an Order reaffirming its intention to call its experts to the stand as witnesses and explaining its reasons for doing so. On October 19th, the Appeal Board denied the staff's motion for directed certification stating that, while it would be justified in taking interlocutory review of the merits of the seismic issue, it would refrain from doing so in order to avoid further delay. On December 14, 1981, the Appeal Board issued the memorandum which is presently before the Commission and in which the Appeal Board reiterates its position that a Licensing Board should call its own witnesses 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." The Licensing Board's experts finally took the stand to testify during the week of January 11, 1982.

Instead of playing cat and mouse, the Appeal Board should have either granted or denied the staff's petition for interlocutory review. With regard to the merits, the Appeal Board should have chosen a more liberal standard which would help the Licensing Boards in fulfilling their function. The standard it picked is, as a practical matter, almost impossible to meet and will serve only to hobble the Licensing Boards.

The Licensing Board's actions may, in their own way, be as deficient as the Appeal Board's. The Chairman of the Licensing Board Panel has informed the Commission that the Licensing Board's disregard for the Appeal Board's directives stemmed, in part, from the Licensing Board's fear that, without the testimony of its own witnesses, it would not be able to rule in favor of issuing an operating license. The Licensing Board should have obeyed the Appeal Board directive, however misguided, and, if the record did not justify a decision favorable to the applicant — who has the burden of proof — the Licensing Board should have denied the operating license.

Neither of this agency's adjudicatory bodies has been able to deal with this case in a straightforward fashion. The Boards have concentrated upon extraneous factors rather than upon their responsibility to ensure the health and safety of the public. Their contradictory efforts to guarantee the prompt licensing of this plant have warped the procedural rules which govern our proceedings.

Of course, the Boards have been getting their cues from the Commission itself. In the present instance, the General Counsel advised the Commission that it could take review or not take review, obtain the views of the parties or issue a decision without doing so, or that it could issue a letter — rather than an order — stating that it did not endorse the Appeal Board's standard, or any other specific standard, and would not do so until

the agency's lawyers and adjudicatory panels had had a chance to give the matter some more thought. Needless to say, the General Counsel recommended, and the Commission adopted, the latter course. In effect, the Commission is saying that although the Appeal Board applied the wrong standard, its heart was in the right place.

The Commission would have done better to take review of the decision, hear the parties, and issue a decision setting forth the proper standard. Alternatively, if the Commission approved of the standard enunciated by the Appeal Board, it should have summarily affirmed. The course it chose leaves the Boards and litigants wondering about the presently applicable standard and fortifies the impression that the Commission is incapable of deciding a case.

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)

June 29, 1982

The Commission denies the intervenors' application for stay of the low power operating license for Unit 2 of the plant filed by the intervenors following denial of their earlier stay request by the Appeal Board.

RULES OF PRACTICE: CROSS EXAMINATION BY PARTIES

The ability to conduct cross-examination in an adjudication is not such a fundamental right that its denial constitutes prejudicial error *per se*.

RULES OF PRACTICE: FINDINGS OF FACT

The "right" to file proposed findings of fact in an adjudication is not unlawfully abridged unless there was prejudicial error in refusing to admit the evidence that would have been the subject of the findings.

MEMORANDUM AND ORDER

On January 11, 1982, the Atomic Safety and Licensing Board issued a partial initial decision authorizing the Director, Office of Nuclear Reactor Regulation, to issue an operating license for fuel loading and low-power

testing for San Onofre Nuclear Generating Station, Unit 2. (LBP-82-3, 15 NRC 61) Intervenor Carstens, *et al.* (Intervenor) filed an application for a stay of the low-power license with the Atomic Safety and Licensing Appeal Board (Appeal Board) pending appeal. The Appeal Board denied the stay motion on April 26, 1982 (ALAB-673, 15 NRC 688) and Intervenor filed with the Commission an "Application for Stay of Low Power License (10 CFR 2.788) and Appeal from Denial of by the ALAB" on essentially the same grounds as the motion filed with the Appeal Board.

We have examined the Intervenor's motion in light of the criteria set forth in 10 CFR 2.788 for granting a stay¹ and agree with the Atomic Safety and Licensing Appeal Board that the Intervenor has not made a strong showing that they are likely to prevail on the merits or that they will be irreparably harmed by the operation of Unit 2 pending appeal of the Licensing Board decision. None of the arguments raised in the application before the Commission lead us to disagree with the Appeal Board's disposition of the issues raised.² Intervenor do argue before us that the ability to conduct cross-examination and to make proposed findings of fact and conclusions of law are "fundamental rights" in an adjudication which they were denied by the Licensing Board's foreclosure ruling. We disagree. Cross-examination is not such a "fundamental right" that any denial constitutes prejudicial error *per se*. Moreover the "right" to file proposed findings is not unlawfully abridged unless there was prejudicial error in refusing to admit the evidence that would have been the subject of the findings. We agree with the Appeal Board that intervenors have not made a persuasive showing that prejudicial error was committed.

In their stay motion before the Commission, Intervenor also claim that the evidence excluded by the Licensing Board was within the scope of an accepted contention. Whether this is technically correct (and we make no determination on this question), it does not affect our decision on the stay motion. It was not improper for the Licensing Board to exclude testimony on the ground that it lacked any probative value and we agree with the

¹ Those criteria are:

- (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. 10 CFR 2.788(e).

In this case, consideration of the first two criteria is dispositive.

² We express no view at this time whether the Licensing Board erred in excluding the "pre-1973" evidence. Our agreement with the Appeal Board's disposition of this issue is based on our agreement that intervenors have not sufficiently demonstrated that they were significantly prejudiced due to the foreclosure ruling.

Appeal Board that Intervenors have not sufficiently demonstrated that they were substantially prejudiced by not being allowed to cross-examine witnesses on pre-1973 data relating to the capability of the Cristianitos fault. Thus even if the issue were within the scope of a contention set for hearing, the result would be the same.

For the above reasons, the application for stay of the low-power license and appeal from the Appeal Board decision (ALAB-673) is denied. The separate views of Commissioner Gilinsky are attached.

It is so ORDERED.

For the Commission

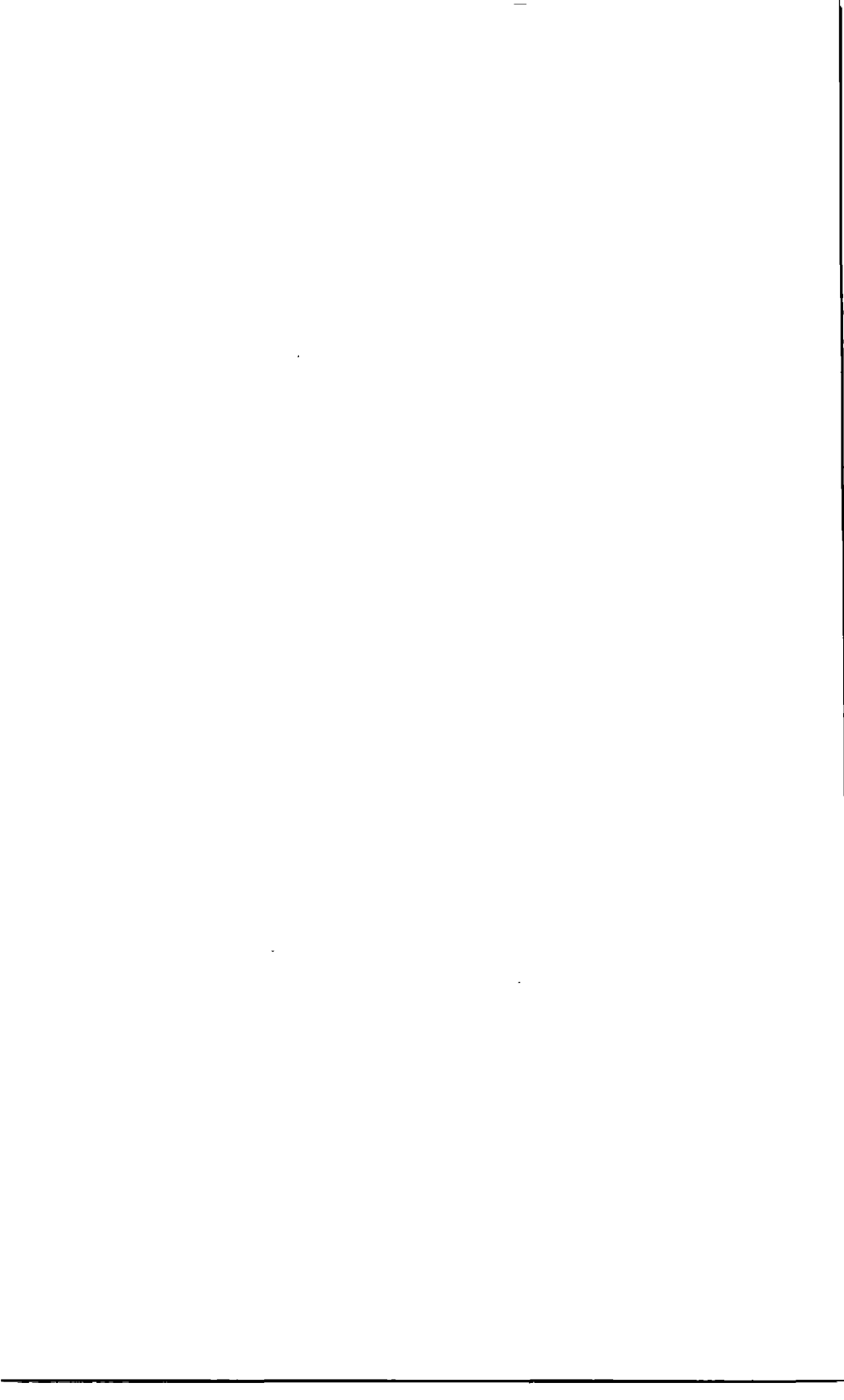
SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.
this 29th day of June, 1982.

SEPARATE VIEWS OF COMMISSIONER GILINSKY

I concur in the result reached by the Commission, but not its opinion. For largely the same reasons as the Appeal Board, I have concluded that the Intervenors have failed to establish that they are entitled to a stay of the Licensing Board's decision — which authorizes fuel loading and low power testing — despite the Licensing Board's exclusion of testimony and restriction of cross-examination on the capability of the Cristianitos fault.

I also agree with the Appeal Board that the Licensing Board acted improperly. The Licensing Board's expansive reading of what issues may be excluded from litigation in an operating license hearing goes far beyond the past practice of this agency. The Licensing Board would have us exclude from a hearing *any* issue which *could* have been raised by *any* party in a prior hearing, even though it was not in fact raised by anyone. This is neither fair nor supported by any reasons of public policy.



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Stephen F. Ellperin, Chairman
Dr. John H. Buck
Gary J. Edles

In the Matter of

Docket Nos. 50-259 OL
50-260 OL
50-296 OL

TENNESSEE VALLEY AUTHORITY
(Browns Ferry Nuclear Plant,
Units 1, 2 and 3)

June 10, 1982

The Appeal Board issues a memorandum re-emphasizing its need to be advised by the parties of all significant developments that may bear on decisions in pending proceedings. The memorandum is prompted by the failure of the parties to advise the Board in a timely fashion of material changes in the evidence.

RULES OF PRACTICE: RESPONSIBILITIES OF PARTIES

Parties in Commission proceedings have an absolute obligation to alert adjudicatory bodies directly regarding (i) new information that is relevant and material to the matter being adjudicated; (ii) modifications and rescissions of important evidentiary submissions; and (iii) outdated or incorrect information on which the board may rely. *Cf. Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), ALAB-138, 6 AEC 520, 523 (1973).*

APPEARANCES

Mr. Robert B. Pyle, Chattanooga, Tennessee, for the petitioners,
David R. Currott, et al.

Messrs. Herbert S. Sanger, Jr., Lewis E. Wallace, James F. Burger and W. Walter LaRoche, Knoxville, Tennessee, for the applicant, Tennessee Valley Authority.

Mr. Richard J. Rawson for the Nuclear Regulatory Commission staff.

MEMORANDUM

This proceeding, which involves an application by the Tennessee Valley Authority for the storage of low level radioactive waste at the Browns Ferry Nuclear Plant, is now before the Commission on review of our decision in ALAB-664, 15 NRC 1 (1982). It has recently come to our attention, however, that on November 3, 1981, while the case was pending before us, TVA submitted to the NRC staff a modification of its application. TVA never served that modification on the parties or brought it to our attention. It was first made available through staff counsel on March 29, 1982, long after we had rendered our decision. Although recognizing that we no longer have jurisdiction over the case, we issued an order (unpublished) asking TVA and the staff to explain why the modification was not served or brought to our attention in a timely fashion.

Upon review of those explanations, we are convinced that TVA's failure to serve its modification on other parties and us violated a long-standing requirement imposed by this Board. See generally, *Duke Power Co.* (Catawba Nuclear Station, Units 1 & 2), ALAB-355, 4 NRC 397, 406 note 26 (1976); *Georgia Power Co.* (Alvin W. Vogtle Nuclear Plant, Units 1 & 2), ALAB-291, 2 NRC 404, 411 (1975); and *Duke Power Co.* (William B. McGuire Nuclear Station, Units 1 & 2), ALAB-143, 6 AEC 623, 625 (1973). We are also concerned that the staff's internal procedures were inadequate to keep staff counsel apprised of material developments regarding the application. We are issuing this opinion to re-emphasize our need to be advised of all significant developments that may bear on decisions in pending proceedings.

I. Background

An understanding of our concern over the failure to provide us (and the parties) with important new information requires an appreciation of the exact chronology of events. To facilitate this understanding, we have listed the key dates below:

July 31, 1980

Original application filed seeking (i) temporary storage; (ii) installation of volume reduction and

incineration equipment, and (iii) life of the plant storage.

November 17, 1980 Amended application filed limiting request to on-site five year storage.

December 11, 1980 Federal Register notice. (45 *Fed. Reg.* 81697)

January 14-16, 1981 Petitions to intervene filed.

August 10, 1981 Staff letter sent to TVA requesting additional information and advising of the need to revise or amend the application.

August 19, 1981 TVA acknowledges receipt of staff request.

October 2, 1981 Licensing Board issues decision (LBP-81-40) denying intervention and requests for hearing.

October 19, 1981 Notice of appeal of Licensing Board decision filed.

October 22, 1981 TVA submits answers to staff questions.

November 3, 1981 TVA submits updated amended application to the staff. (transmittal letter included as an appendix)

November 23, 1981 Appeal Board orally requests information from staff counsel.

November 23, 1981 TVA files brief in opposition to appeal.

November 24, 1981 Staff counsel responds to Appeal Board request. (included as an appendix)

November 25, 1981 Staff files brief in opposition to appeal.

January 6, 1982 Appeal Board issues decision (ALAB-664) reversing the Licensing Board.

January 21, 1982 NRC staff files petition for Commission review of ALAB-664.

January 27, 1982 TVA files petition for Commission review of ALAB-664.

March 29, 1982 Staff counsel serves November 3, 1981 documents on all parties and both adjudicatory boards.

April 16, 1982 Commission grants discretionary review of ALAB-664.

As the chronology makes clear, between the time of TVA's original July 31, 1980 application and the November 3, 1981 revision, TVA's application underwent a metamorphosis from an application to reduce, incinerate and store low level radioactive waste during the full operational life of the plant to one which only sought approval to store the waste onsite for five years. The substantial change in the nature of the project had prompted a series of staff questions. Those questions were answered in a document submitted to the staff on October 22, 1981. Over a week later, on November 3, 1981, TVA separately submitted what it described as "an

updated amendment" to its July 31, 1980 application intended to provide "an update of all new information that has been submitted since the original July 31, 1980 submittal."

The November 3, 1981 revision is a 60 page document describing the waste storage facility and the proposed method of operation which essentially replaces Enclosure 2 of the July 31, 1980 application.¹ Neither we nor the parties to the case (including counsel for the staff) were served with a copy of the November 3, 1981 submission.

Unaware of TVA's November 3 submission, and in order to facilitate our review of the case, the Secretary to the Appeal Board orally asked staff counsel, on November 23, 1981, for copies of TVA's original application, the November 17, 1980 amendment, and the environmental assessment. He forwarded these materials to us with a transmittal letter on the following day. Copies of the letter were served on all parties. That letter, however, contained no indication that any of the requested documents had been superseded in whole or in part and staff counsel now advises us that, at the time, he was unaware of the November 3, 1981 changes. He first became aware of the November 3 document during his preparation for an April 1, 1982 prehearing conference when the technical members of the NRC staff provided him with a copy. Staff counsel states that he brought the matter promptly to the attention of TVA's counsel and was informed that service had not been made on other parties (or us) because TVA did not believe it was obliged to do so. Staff counsel disagreed with TVA's understanding of its obligations and, on March 29, 1982, promptly served the November 3 revision on all parties.

TVA's counsel confirms staff counsel's representation that TVA did not believe that the change was required to have been served:

... TVA does not believe that the November 3 submittal was material to the issues before the Appeal Board, and whether or not the Appeal Board had the document, its decision should not have been affected. The document referred to did not amend TVA's July 31, 1980 application for storage of low-level radioactive waste (LLRW), as amended on November 17, 1980 which the Appeal Board had requested and received. It merely updated the application to reflect questions and responses exchanged between the NRC staff and TVA. It is a normal practice for an applicant from time to time during the course of an application to update

¹ Enclosure 2 provided the basic description of the waste storage facility and the proposed method of its operation. The original application also contained a construction schedule (Enclosure 3) and an environmental assessment.

licensing documents by incorporating in them all of the then current information and commitments generated during the course of the NRC staff's review.²

TVA and the staff submitted their appellate briefs to us on November 23 and 25, 1981, respectively. Neither brief noted the November 3, 1981 revision. We issued our decision on January 6, 1982.

II. Discussion

We have no doubt that the November 3, 1981 submittal constituted a material change in TVA's application that was required to have been served on all parties and brought to our immediate attention. While we believe that staff counsel acted properly in alerting all parties to the document as soon as he became aware of it, we are nevertheless concerned that the staff's internal procedures were inadequate to alert staff counsel to the document even as he was preparing his brief to us on the pending appeal.

We reject TVA's argument that the new information did not constitute a material alteration of its earlier presentation. The original Enclosure 2 of TVA's July 31, 1980 application, which was a principal evidentiary support for that application, has been significantly modified if not entirely superseded. Three specific changes are illustrative. First, the title of the document has been changed from "Long-Term, Low-Level Radioactive Waste" to simply "Low-Level Radioactive Waste," reflecting the change in TVA's overall approach. The original July 31, 1980 application contemplated long-term life-of-the-plant low level radioactive waste storage coupled with volume reduction and incineration. While the November 17, 1980 amendment narrowed the request to store low level radioactive waste onsite for five years, the amendment was not accompanied by any revised evidentiary appendices analyzing the more limited objectives. Rather, the analysis of the more limited objectives was provided for the first time in TVA's November 3, 1981 submittal.

Second, the justification for the facility — the section on "Need" (section 1.3) — has been completely revised to reflect TVA's more limited objectives of five year storage. The "Need" section in the original document indicated that the proposal was to "make TVA's operations at Browns Ferry essentially immune from outside restrictions on disposal of LLRW for the foreseeable future." The new "Need" section indicates, in contrast, that

² Tennessee Valley Authority's Response to Appeal Board Order (May 27, 1982), p. 2.

TVA's future use of the volume allocation at Barnwell is under continuing review. Because of uncertainty in TVA being able to obtain sufficient disposal allocations at Barnwell, our present plans are to store radioactive material onsite when our storage facility is licensed. We will evaluate continued offsite disposal during the five-year storage period, if commercial burial space remains available. . . .³

Third, the section on "Decommissioning" has been revised to take into account the applicant's shift from long-term to five year storage. The original section on "decommissioning" (section 7) contemplated life-of-the-plant storage with three options ultimately available:

1. Placing the storage facility in an inactive state and providing a security and monitoring force for an indefinite time.
2. Sealing all radioactive material inside the storage facility (utilizing a material such as concrete) in a technique known as entombment.
3. Retrieving all radioactive waste containers and transporting all of this material to another facility. The storage site can then be decontaminated as necessary, leaving the area in as close to its original state as possible. This method may also involve dismantling and removing the storage facility.

TVA expressly indicated that "[n]o specific method will be selected at this time since actual decommissioning for the storage facility will not be necessary for approximately 30 years . . . Although the exact decommissioning method will not be determined until needed, the third method above is preferred by TVA at this time." New section 7 reads, in part:

At the end of the five-year license period for the proposed facility, TVA will have two options.

1. Seek an extension of the license from the NRC.
2. Retrieve all radioactive waste containers and ship them offsite to a disposal facility. The modules could then be decontaminated.

If adequate offsite disposal space is available at the end of the five-year license period, TVA intends to pursue option 2. If offsite disposal space is not available, TVA will pursue option 1. . . .⁴

The majority's decision in ALAB-664 turned on TVA's failure to explain on the record how five year storage was to be separated from the original integrated proposal including long-term storage and incineration. 15 NRC at 8-9. It noted:

³ Compare Enclosure 2 to TVA's July 31, 1980 application with the Enclosure to the November 3, 1981 submittal.

⁴ *Ibid.*

While we do not suggest that TVA may not have altered its plans, or could not do so in the future, we believe that, before we dismiss the petitioners' contentions, TVA has some obligation to come forward with an explanation on the record of what options — other than incineration — it would, or could, pursue at the end of the five year period. . . .

Id. at 9. Similarly, the dissenting opinion specifically relied on Enclosure 2 as part of its analysis. *Id.* at 17. 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.

We find TVA's assertions that the November 3, 1981, submission did not constitute an amendment and was immaterial to our consideration of the appeal disingenuous. TVA itself, in the accompanying cover letter, describes its November 3 submittal as "an updated amendment to TVA's July 31, 1980 application for the storage of low-level radioactive waste at the Browns Ferry Nuclear Plant."⁵ Irrespective of nomenclature, however, TVA had an absolute obligation to advise us that the supporting evidentiary documentation upon which we were relying had been superseded. Staff counsel's November 24, 1981 letter to us, in response to the request of the Appeal Board's Secretary, expressly indicated that he was sending us TVA's July 31, 1980 application as amended November 17, 1980. TVA received a copy of that letter. It is plain that the new Enclosure is a direct replacement for that part of the July 31 application (Enclosure 2) that described the facility and its method of operation. Even if TVA considered the information immaterial (and we find it difficult to comprehend how it could be), it knew that we had expressly requested and planned to review it. In this circumstance, counsel for TVA had an obligation to advise us that we were about to rely on outdated, *i.e.*, incorrect, information.⁶

⁵ As noted above, an August 10, 1981, letter to TVA from the staff had specifically requested an item-by-item response to a list of questions concerning the July 30, 1980 application, as amended November 17, 1980. The letter also alerted TVA to the separate need "to revise or amend" its application to reflect its responses. TVA's August 19, 1981 letter expressly stated that it would revise the July 31 application to reflect the new information. TVA's responses to the questions were sent to the staff under a transmittal letter dated October 22, 1981, so there can be no doubt that its separate November 3 follow-up submission was intended to revise or amend its application to bring it into conformity with its October 22 responses.

⁶ Cf. *Vermont Yankee Nuclear Power Corp.* (Vermont Yankee Nuclear Power Station), ALAB-138, 6 AEC 520, 533 (1973). Among the issues in that case was whether a loss of coolant accident would compromise the emergency core cooling system criterion that the calculated peak cladding temperature in the event of an accident not exceed 2300°F. Our

(CONTINUED)

III. Conclusions

Scientific technology is ever-changing. The plans of applicants and other litigants, as reflected in their submissions to the Commission, are also frequently in a state of flux. Yet the hearing process is necessarily tied to a point in time, *i.e.*, the date on which evidence is presented for consideration. To bridge this gap, we have always insisted that significant changes be brought to the immediate attention of all decisional bodies.

The obligation to provide information to adjudicatory bodies requires that information be submitted to them directly. Parties should not assume that information made available to a component of the Commission's staff will necessarily find its way into the record and come to the attention of the decisional body. Similarly, internal staff procedures must insure that staff counsel — who is, after all, the chief line of communication with the adjudicatory bodies — be fully apprised of new developments.⁷

We recognize that not every change in factual circumstances is important. We nonetheless remind parties to Commission proceedings of their absolute obligation to alert adjudicatory bodies directly regarding (i) new information that is relevant and material to the matters being adjudicated; (ii) modifications and rescissions of important evidentiary submissions; and (iii) errors of the type discussed in the *Vermont Yankee* case, *supra*, note 6.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the Appeal Board

decision incorrectly observed that the peak cladding temperature in the event of an accident at the Vermont Yankee plant would be 2280°F. Applicant's counsel promptly advised us that the actual temperature in the event of an accident, as reflected in the record, would be 2298°F. Although the precise temperature level turned out to be immaterial because both met the 2300°F criterion, counsel properly alerted us to our earlier reliance on incorrect information.

⁷ In this connection, we recently had occasion to note that both a Licensing Board and an Appeal Board were asked to rule on the admission of a contention concerning the efficacy of recombiners for hydrogen mitigation, even though the applicants had apparently decided to rely principally on a distributed igniter system. The applicants had only advised the Commission's Division of Licensing of that change. *Cleveland Electric Illuminating Co.* (Perry Nuclear Power Plant, Units 1 & 2), ALAB-675, 15 NRC 1105, 1116 (1982).

**TENNESSEE VALLEY AUTHORITY
400 Chestnut Street Tower II
Chattanooga, Tennessee 37401**

November 3, 1981

Director, Office of Nuclear Material Safety
and Safeguards

Attention: Mr. L. C. Rouse, Chief
Advanced Fuel and Spent Fuel
Licensing Branch

U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Rouse:

In the Matter of the
Tennessee Valley Authority

Docket No. 30-19102

In response to your letter to H. G. Parris dated August 10, 1981, we are submitting an updated amendment to TVA's July 31, 1980 application for the storage of low-level radioactive waste at the Browns Ferry Nuclear Plant. The amendment requests authorization for TVA to store the low-level radioactive waste generated from the operation of Browns Ferry for a period of five years. The amendment is enclosed and provides an update of all new information that has been submitted since the original July 31, 1980 submittal. We believe that this submittal includes all information requested by your August 10, 1981 letter.

If there is any additional information necessary to complete the review of TVA's low-level storage application, please let us know.

Very truly yours,

**TENNESSEE VALLEY
AUTHORITY**

L. M. Mills, Manager
Nuclear Regulation and Safety

Subscribed and sworn to before
me this 3rd day of Nov. 1981

Paulette H. White
Notary Public

My Commission Expires 9-5-84

Enclosure

cc: See page 2

Director, Office of Nuclear Material
Safety and Safeguards

November 3, 1981

cc (Enclosure):

Mr. Charles R. Christopher
Chairman, Limestone County Commission
P.O. Box 188
Athens, Alabama 35611

Office of Nuclear Reactor Regulation
Attention: Mr. Darrell G. Eisenhut, Director
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Mr. K. D. Fagan, Supervisor - Nuclear
General Electric Company
832 Georgia Avenue
Chattanooga, Tennessee 37402

Dr. Ira L. Myers
State Health Officer
State Department of Public Health
State Office Building
Montgomery, Alabama 36104

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

November 24, 1981

Stephen F. Eilperin, Esq.
Chairman
Atomic Safety and Licensing Appeal Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

In the Matter of
TENNESSEE VALLEY AUTHORITY
(Browns Ferry Nuclear Plant, Unit Nos. 1, 2 and 3)
Docket Nos. 50-259, 50-260 and 50-296

Dear Mr. Chairman:

As your secretary requested, I enclose for the Appeal Board records copies of the following documents:

1. TVA's application, dated July 31, 1980, for an amendment to the operating licenses for Browns Ferry Nuclear Plant;
2. TVA's amended application, dated November 17, 1980; and
3. TVA's Environmental Assessment, dated February 28, 1980, of low-level radioactive waste management for the Browns Ferry Nuclear Plant.

These documents were previously supplied to the Atomic Safety and Licensing Board by letter dated April 15, 1981 at the request of its then-chairman, Herbert Grossman.

Sincerely,

Richard J. Rawson
Counsel for NRC Staff

Enclosures As Stated
cc (w/o enclosures):
Service list

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

**In the Matter of
TENNESSEE VALLEY
AUTHORITY
(Browns Ferry Nuclear Plant,
Unit Nos. 1, 2 and 3)**

**Docket Nos. 50-259,
50-260 and 50-296
(License Amendment to permit
onsite storage of low level
radioactive waste)**

CERTIFICATE OF SERVICE

***John H Frye III, Chairman
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555**

**Mrs. Elizabeth B. Johnson,
Administrative Judge
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404 James Robertson Way
Nashville, Tennessee 37219

*Alan S. Rosenthal, Chairman
Atomic Safety and Licensing
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U.S. Nuclear Regulatory
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Washington, D.C. 20555

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Washington, D.C. 20555

*Secretary
U.S. Nuclear Regulatory
Commission
ATTN: Chief, Docketing and
Service Branch
Washington, D.C. 20555

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING APPEAL BOARD

Administrative Judges:

Stephen F. Elperin, Chairman
Christine N. Kohl
Dr. Reginald L. Gotchy

In the Matter of

Docket Nos. 50-454 OL
50-455 OL

COMMONWEALTH EDISON
COMPANY
(Byron Nuclear Power
Station, Units 1 and 2)

June 17, 1982

The Appeal Board reverses a Licensing Board decision (LBP-81-52, 14 NRC 901 (1981), *reconsideration denied*, LBP-82-5, 15 NRC 209 (1982)) that dismissed intervenor from this operating license proceeding for deliberately and willfully refusing to comply with its discovery order. The Appeal Board decides that dismissal is too severe a sanction to impose in the circumstances and replaces it with a less severe sanction.

LICENSING BOARDS: DISCRETION IN MANAGING
PROCEEDINGS (DISMISSAL)

The sanction of dismissal from an NRC licensing proceeding is to be reserved for the most severe instances of a participant's failure to meet its obligations. *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 454 (1981).

LICENSING BOARDS: DISCRETION IN MANAGING
PROCEEDINGS (SANCTIONS)

In selecting a sanction, licensing boards are to consider "the relative importance of the unmet obligation, its potential for harm to other parties

or the orderly conduct of the proceeding, whether its occurrence is an isolated incident or a part of a pattern of behavior, the importance of the safety or environmental concerns raised by the party, and all of the circumstances." Boards should attempt to mitigate the harm caused by the failure of a party to fulfill its obligations and bring about improved future compliance. *Ibid.*

OPERATING LICENSE PROCEDURES: RESPONSIBILITY OF NRC STAFF

An operating license may not issue unless and until the NRC staff 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: DISCOVERY (ANSWERS TO INTERROGATORIES)

Answers to interrogatories 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). A broad statement that the information sought by an interrogatory is to be found in a mass of documents is also insufficient. *Harlem River Consumers Coop., Inc. v. Associated Grocers of Harlem, Inc.*, 64 F.R.D. 459, 463 (S.D.N.Y. 1974). 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). See also *Nagler v. Admiral Corp.*, 167 F. Supp. 413 (S.D.N.Y. 1958). Where an interrogatory seeks the names of expected expert witnesses, the nature of their testimony, and the substance of their opinions, the responding party may not stop at merely identifying its experts; it must provide all the information requested. See *Bates v. Firestone Tire & Rubber Co.*, 83 F.R.D. 535, 538, 539 (D.C.S. 1979).

APPEARANCES

Mr. Myron M. Cherry, Chicago, Illinois (with whom Mr. Peter Flynn was on the brief), for the intervenor Rockford League of Women Voters.

Mr. Michael I. Miller, Chicago, Illinois (with whom Messrs. Paul M. Murphy and Alan P. Bielawski were on the brief), for the applicant Commonwealth Edison Company.

DECISION

The Rockford League of Women Voters (the League) has appealed from two Licensing Board decisions that dismissed the League from this operating license proceeding because of the League's willful failure to answer interrogatories as required by the Board's August 18, 1981 order (discovery order). See LBP-81-52, 14 NRC 901 (1981), *reconsideration denied*, LBP-82-5, 15 NRC 209 (1982). Because we believe the Licensing Board acted inconsistently with Nuclear Regulatory Commission policy in imposing the most severe sanction for the League's failings, we reverse and remand for further proceedings in conformity with this opinion.¹ In ordering reinstatement, we take various steps to assure that the League does not benefit from the delay it has caused in this proceeding. See *infra*, pp. 1419-1421.

I. Factual Background

While the most critical facts in this case concern the events giving rise to the Licensing Board's discovery order and the League's response (or lack of response) to it, a fuller exposition of the facts is necessary to understand our disposition of this appeal.

We begin with the Licensing Board's December 19, 1980 memorandum and order. There the Board overruled many of the objections raised by the NRC staff and Commonwealth Edison Company (Commonwealth Edison or applicant) to the League's revised contentions. LBP-80-30, 12 NRC

¹ The Commission's May 20, 1981 *Statement of Policy on Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452, 454, provides, among other things, that the sanction of dismissal is to be reserved for the most severe instances of a participant's failure to meet its obligations. See discussion *infra*, pp. 1410-1411, 1416-1421.

683. The Board's order admitted 114 of the League's contentions and instructed that "discovery shall commence forthwith" *Id.* at 698.²

Approximately two months went by and none of the parties initiated discovery.³ Instead, on February 13, 1981 Commonwealth Edison sought reconsideration of the Board's ruling insofar as it admitted 53 particular League contentions. When the Board had not ruled on that petition by July 8, 1981, the applicant finally submitted to the League and also to the other intervenor, DAARE/SAFE, four "boilerplate" interrogatories.⁴ Neither responded. Commonwealth Edison then promptly filed a motion to compel discovery.⁵

On August 5 the League filed an objection to the interrogatories. It argued that they were premature because (1) the Board had not yet ruled upon applicant's petition for reconsideration, and (2) the staff's Safety Evaluation Report (SER) had not yet issued. The League also noted that it had not settled upon what witnesses it expected to call at the hearing.⁶

² The League had originally filed 13 contentions, while the other intervenors, the DeKalb Area Alliance for Responsible Energy (DAARE) and the Sinnissippi Alliance for the Environment (SAFE) had jointly filed ten. At the special prehearing conference held August 21-22, 1979, the Licensing Board urged the NRC staff, applicant, and the intervenors to attempt to formulate an agreed set of contentions. The parties were unable to agree and the League submitted its revised contentions, greatly expanded, on March 10, 1980. Close to a third of the contentions were almost a verbatim copy of those from another proceeding. The applicant and staff opposed the contentions in large measure. There the dispute rested until December 19, 1980, when the Board issued its opinion.

³ But see *infra*, n. 22.

⁴ In full, the interrogatories addressed to the League read:

1. With respect to each Contention advanced by the League which has been admitted by the Atomic Safety and Licensing Board in the above-captioned proceeding, list the following:

- a. A concise statement of the facts supporting each Contention together with references to the specific sources and documents and portions thereof which have been or will be relied upon to establish such facts;
- b. the identity of each person expected to be called as a witness at the hearing;
- c. the subject matter on which the witness is expected to testify;
- d. the substance of the witness's testimony.

2. With respect to each witness identified in the League's response to Interrogatory 1 above, identify each document which the witness will rely upon in whole or in part in the preparation of his testimony or in the development of his position.

3. With respect to each witness identified in the League's response to Interrogatory 1 above, identify the witness's qualifications to testify on the subject matter on which the witness will testify.

4. Identify all persons who participated in the preparation of the answers, or any portion thereof, to these Interrogatories.

⁵ The answers to the interrogatories were due July 27, 1981. See 10 CFR 2.740b(b), 2.710. Commonwealth Edison filed its motions to compel discovery by the League and DAARE/SAFE on July 30.

⁶ Objections to Commonwealth Edison's First Round of Interrogatories to Rockford League of Women Voters (August 5, 1981).

Two days later the League filed what it termed a "response" to the motion to compel discovery where it asserted further that both of the League's lawyers had been engaged virtually full-time in another case. The League also claimed that hearings in this case would not begin for at least another year and that its answers to the interrogatories at this preliminary stage would be of minimal (if any) benefit, grossly disproportionate to the time and effort entailed in formulating answers. Finally, the League argued that Commonwealth Edison had not even consulted the League in an attempt to resolve differences over the interrogatories, that local court practice would require such an effort before a motion to compel could be filed, and that the League stood ready and willing to confer with the applicant in an attempt to reach an agreement on the matter.⁷

II. The Licensing Board's Orders and the Parties' Responses

1. On August 18, 1981 the Licensing Board issued a memorandum and order that denied the applicant's petition for reconsideration of the Board's December 1980 ruling on contentions, and granted the applicant's motion to compel discovery by the League "subject to a prompt conference between the parties." LBP-81-30-A, 14 NRC 364, 374 (1981).⁸

The Board rejected the League's excuses for not answering the interrogatories. The first of these — that the interrogatories were premature because applicant's petition for reconsideration had not been ruled upon — was mooted by the Board's denial of that petition. As to the prematurity claim based upon non-availability of the SER, the Board responded:

While more information may be available when the SER is filed, there is presently available a large amount of documentary and other information. The movant is entitled to full and responsive answers based upon the presently known status of these matters, and to additional information when it becomes available.

Id. at 373. With regard to the engagements in other proceedings of the League's counsel, the Board stated:

The involvement of a party's lawyers in litigation or other professional business does not excuse noncompliance with nor extend deadlines for compliance with our rules of practice. The League's response is also a bit too casual about the length of time available for [trial] preparations leading to the commencement of

⁷ League Response to Motion to Compel Discovery (August 7, 1981).

⁸ The Board's memorandum and order also granted the applicant's motion to compel discovery by DAARE/SAFE, and directed those intervenors to file responsive answers "forthwith." 14 NRC at 374.

evidentiary hearings. A schedule will be issued soon by the Board. However, a large number of somewhat complex contentions have been filed by the League, and the Applicant is not required to delay discovery or trial preparation.

Id. at 373-74. Finally, the Board took cognizance of the League's desire for a conference with Commonwealth Edison in an effort to work out differences over the interrogatories:

The last point relied on by the League's response concerns the request for consultation on discovery between or among the parties. This request is covered by paragraph 1 of the discovery rules set forth *supra*. The parties will be allowed a reasonable period of time to confer. However, responsive answers shall be filed to these and other interrogatories promptly, and discovery shall be conducted expeditiously.

Id. at 374.⁹

⁹ The "discovery rules" to which the Board alluded were nine measures set out earlier in its opinion to clarify and expedite further discovery. In full, they were as follows (*id.* at 372-73):

1. All parties are directed to confer directly with each other regarding alleged deficiencies in discovery before resorting to motions involving the Board. To this end, voluntary discovery and disclosure are highly encouraged. All motions involving discovery controversies shall describe fully the direct efforts of the parties to resolve such disputes themselves.

2. We reaffirm a rule previously adopted, requiring that pursuant to the provisions of 10 CFR §2.740(e)(3), all interrogatories filed by any party to this proceeding, past or future, shall be deemed to be continuing in nature, and the party to whom they are addressed shall be under a continuing duty to supplement the responses as necessary to keep them currently accurate.

3. Objections to interrogatories or document requests shall be set forth in an appropriate motion for protective order, accompanied by points and authorities sufficient to enable the Board to rule immediately upon receipt of the opposing party's answer to be filed within ten (10) days (10 CFR §§2.718, 2.730, 2.740, 2.740b, 2.741).

4. All filings scheduled by the Board shall be physically lodged with the Board and parties on or before the due date, not merely mailed on that date. Expedited or following day delivery shall be employed when necessary.

5. The sheer number, volume and complexity of interrogatories should be substantially reduced. Boiler plate formulas involving unnecessary and redundant details should be avoided. The Board will consider limiting the number of interrogatories in accordance with the Commission's suggestion above, to achieve a smaller number of better focused interrogatories.

6. A failure to furnish requested information based upon a claim of awaiting further discovery is unresponsive unless precise information is given as to the nature and status of pending discovery, and a specification of the relevancy of such facts to the requested information.

7. All discovery shall be expedited to the maximum extent reasonably possible, to accommodate an accelerated hearing schedule that will be issued shortly.

8. A party who files a motion shall not have a right to reply to an answer in opposition thereto, unless prior leave is obtained from the presiding officer (10 CFR

(CONTINUED)

As noted above, the Board's opinion concluded by granting applicant's motion to compel discovery by the League "subject to a prompt conference between the parties." The very next day the Board issued a scheduling order that (as made more stringent on September 9, 1981) put a November 1, 1981 completion date for all discovery pending under the August 18, 1981 discovery order, "including answers to interrogatories, production of documents, and depositions."¹⁰

2. At this same time another proceeding involving Commonwealth Edison and the League was pending before the Illinois Commerce Commission, the agency that has the obligation under state law to pass upon the need for the Byron facility.¹¹ It too was in the discovery stage.¹²

On September 10 and 15, 1981 the League and Commonwealth Edison conferred about discovery in both proceedings, but focused principally on the state regulatory proceeding.¹³ The upshot of the discussions was an

§2.730(c)). Such leave will be granted sparingly, and then only upon a strong showing of good cause.

9. The parties are reminded that interrogatories are not the sole discovery method established by our Rules of Practice (10 CFR §§2.740-2.742). A well-timed deposition can often accomplish more than six months of back-and-forth fencing over interrogatories and answers.

These measures had been adopted *in toto* from a recent licensing board ruling in another proceeding in implementation of the Commission's contemporaneous guidance on board management of discovery. See *Texas Utilities Generating Co.* (Comanche Peak Steam Electric Station, Units 1 and 2), LBP-81-22, 14 NRC 150, 155-57 (1981), and *Statement of Policy, supra*, n.1, 13 NRC at 455-56.

¹⁰ The Board's scheduling order also reflected staff information that the SER would be issued February 7, 1982. SER discovery was to begin February 8, 1982 and the hearing was (and still is) scheduled to start in August 1982.

¹¹ In November 1980, the League had asked the state commission to institute a proceeding to determine whether the Byron certificate of public convenience and necessity should be suspended, modified, or revoked because of the economic impact of the facility's asserted safety problems. See *Rockford League of Women Voters v. Commonwealth Edison Co.*, Ill. C.C. Docket No. 80-0760.

¹² That did not exhaust the proceedings involving the League and Commonwealth Edison. At the time it filed its request with the state commission, the League also filed a 10 CFR 2.206 request with the NRC's Director of Nuclear Reactor Regulation seeking a halt of construction at Byron and suspension of the construction permit. The 2.206 request was denied in *Commonwealth Edison Co.* (Byron Station, Units 1 and 2), DD-81-5, 13 NRC 728 (1981), *affirmed sub nom.*, *Rockford League of Women Voters v. Nuclear Regulatory Commission*, No. 81-1772 (7th Cir., June 3, 1982).

¹³ The correspondence between Mr. Paul M. Murphy for Commonwealth Edison and Messrs. Myron Cherry and Peter Flynn for the League evidencing these conversations includes, e.g., letter of Paul M. Murphy to Peter Flynn (September 4, 1981), reproduced in LBP-81-52, 14 NRC at 909-10; letter of Paul M. Murphy to Myron Cherry (September 16, 1981), reproduced in *id.* at 911; letter of Myron M. Cherry to Paul M. Murphy (September 16, 1981), attached as Exhibit 21A to Commonwealth Edison's Opposition to the League's Petition for Reconsideration (November 23, 1981); letter of Paul M. Murphy to Myron Cherry (September 17, 1981), attached as Exhibit 14 to League Petition for Reconsideration of Board Orders of October 27, 1981 (November 6, 1981).

agreement by the League to answer Commonwealth Edison's interrogatories in the NRC proceeding by October 1, and a series of agreements dealing with discovery in the state regulatory proceeding.¹⁴ Two issues on which the parties did not agree (or at least had a different understanding of their agreement), however, concerned who would pay the fees for taking the depositions of the League's expert witnesses in the state proceeding, and whether the League's answers to Commonwealth Edison's interrogatories in the NRC proceeding were contingent upon Commonwealth Edison's discovery responses in the state proceeding.¹⁵ The deposition fee dispute led Commonwealth Edison on September 18 to withdraw from its agreements on discovery in the state proceeding. See *infra*, p. 1415-1416. That action, according to the League's later filings, assertedly provided the ground for the League's withdrawal from its agreement to provide answers to Commonwealth Edison's interrogatories in the NRC proceeding.¹⁶

When October 1 passed without Commonwealth Edison having received the League's answers to the interrogatories, the applicant sought to arrange a conference call with the parties and the Licensing Board to discuss the matter. The call took place October 2 without the League's participation.¹⁷ During the call the Licensing Board advised the applicant to put its dispute with the League over the lack of answers to its interrogatories in a written motion to which the League could then respond.

¹⁴ These latter understandings relative to the state proceeding included the scheduling of depositions of witnesses for late September and October, Commonwealth Edison's commitment to respond to the League's interrogatories no later than September 28 and to produce requested documents by October 5, and a tentative discovery cutoff date (the end of October), subject to resolution of outstanding items by the state hearing examiner. See letter of Myron M. Cherry to Paul M. Murphy (September 16, 1981), and letter of Paul M. Murphy to Myron Cherry (September 17, 1981), *supra*, n.13.

¹⁵ Compare letter of Myron M. Cherry to Paul M. Murphy (September 16, 1981), *supra*, n.13 (refusing to produce expert witnesses unless Commonwealth Edison commits to paying \$2,200 in expenses and fees), with letter of Paul M. Murphy to Myron Cherry (September 18, 1981), attached as Exhibit 16C to League Petition for Reconsideration of Board Orders of October 27, 1981 (November 6, 1981) (asserting previous agreement that League would produce expert witnesses Hubbard and Minor without resolving the question of who would pay their professional fees, subject to a subsequent ruling from the state regulatory hearing examiner).

¹⁶ Letter of Paul M. Murphy to Myron Cherry (September 18, 1981), attached as Exhibit 16C to League Petition for Reconsideration of Board Orders of October 27, 1981 (November 6, 1981); League Response to Motion for Sanctions (October 13, 1981) at 1-2 (asserting that the League's answering of interrogatories in the NRC proceeding was contingent upon receipt of certain documentary and other information from Commonwealth Edison).

¹⁷ The League and Commonwealth Edison disagree about whether the League's counsel had agreed to make himself available for the planned conference call. Compare Commonwealth Edison Motion for Sanctions (October 2, 1981) at 3-4 with League Response to Motion for Sanctions (October 13, 1981) at 3. The dispute is immaterial for our purposes. Further, a transcript of the conference call was kept and no matter of substance was decided.

That same day Commonwealth Edison filed a verified motion for sanctions seeking the dismissal of the League as a party to the Byron proceeding for "wilfully flaunt[ing]" (*sic*) the Board's August 18 order requiring prompt answers to the interrogatories.¹⁸ In turn, the League filed a verified response that asserted that answering Commonwealth Edison's interrogatories was contingent upon receipt of certain information, and that the applicant had breached its agreement to supply that information.¹⁹ The League further claimed — once again — that throughout August and September its counsel, Mr. Cherry, had been engaged virtually full-time in litigation in another proceeding, and that Mr. Cherry's partners were not available to assist in answering the interrogatories. The League reemphasized that given the distant hearing date (see *supra*, n.10) it did not see why the current wave of discovery could not proceed later, simultaneously with SER discovery after that document had issued. The League concluded by pointing out that it was raising serious safety and economic issues that in the public interest deserves to be litigated fully.

3. On October 27, 1981 the Licensing Board issued its memorandum and order dismissing the League as a party for "the League's total failure to provide responsive answers to interrogatories." 14 NRC at 906.²⁰ The Board found that interrogatories (such as those served by Commonwealth Edison) that inquired into the factual bases for contentions, their evidentiary support, the identity of witnesses and the substance of their expected testimony were a common and reasonable method of discovery. The Board went on to note that answers to the interrogatories had been due since July 27, 1981 and that the Board's August 18 discovery order had overruled the League's objections to them — the same kind of objections (other engagements of counsel and prematurity) that the League was reiterating in its response to Commonwealth Edison's motion for sanctions. *Id.* at 902-04.

Nor was the Board impressed by the League's argument that information Commonwealth Edison was to provide in the state regulatory proceeding was a pre-condition to the League's answering applicant's interrogatories in this proceeding. The Board stated:

The disputes between counsel concerning depositions and other discovery, as shown by the League's Exhibits A, C and D, do not relate to the instant NRC proceeding. As they show on their face, they involve some pending Illinois Commerce Commission proceeding. The Board does not intend to become involved in some

¹⁸ Commonwealth Edison Motion for Sanctions (October 2, 1981) at 4.

¹⁹ League Response to Motion for Sanctions (October 13, 1981) at 1-2 and Exhibit C.

²⁰ The staff took no position on the dispute and has not participated on the appeal.

collateral litigation which is not shown to be relevant to this proceeding.

Id. at 906. The Board referred to two letters from Commonwealth Edison to the League that reflected a number of attempts by the applicant since the discovery order to obtain from the League a date certain by which the interrogatories would be answered, and the League's commitment, given September 15, to provide answers by October 1.²¹ The Board found nothing in the League's response "to excuse or condone the League's total failure to provide responsive answers to interrogatories." *Ibid.* It concluded with the following observations (*id.* at 907-08):

The facts . . . establish that the League and its counsel have deliberately and willfully refused to comply with the Board's Order of August 18, 1981, and have not answered interrogatories or furnished ordered discovery for a long period of time. The nature of the pretexts and excuses offered for such noncompliance demonstrate that such conduct is not an isolated incident, but rather is part of a pattern of behavior which seriously impedes our proceedings and impairs the integrity of our orders. Sanctions are therefore appropriate both to give all parties due process in this proceeding, and to deter similar conduct by other parties in the future.

The Commission has indicated that the presiding officer has the necessary authority to "impose appropriate sanctions on all parties who do not fulfill their responsibilities as participants." In a recent policy statement, the Commission has discussed the spectrum of sanctions available to licensing boards to assist in the management of proceedings, including the dismissal of a party. Unjustified refusals or failures to comply with discovery orders have resulted in the dismissal of parties or contentions. Under all of the circumstances shown in this proceeding, the Board finds that the League should have all of its contentions stricken, and it should be dismissed as an Intervening party (10 CFR §§2.707, 2.718, 2.740 [footnotes omitted]).

4. The League filed a detailed petition for reconsideration, and Commonwealth Edison an equally detailed response. On January 27, 1982, the Board issued its memorandum and order denying the petition for reconsideration. LBP-82-5, 15 NRC 209. The Board rejected the League's claim that it was being unfairly treated because Commonwealth Edison had not

²¹ Letter of Paul M. Murphy to Peter Flynn (September 4, 1981) and letter of Paul M. Murphy to Myron Cherry (September 16, 1981), *supra*, n.13.

responded to the League's discovery requests,²² and it again rejected as irrelevant the claimed discovery overlap with the state proceeding and the discovery disputes among counsel.²³ Next, the Board found unpersuasive the League's argument that in previous NRC cases the sanction of dismissal had not been so swiftly imposed.²⁴ The Board concluded by noting:

[E]ven at this late date the League has successfully refused to provide the evidentiary bases for its admitted contentions, in spite of the clear mandates of Orders entered December 19, 1980 and August 18, 1981 No Board can manage discovery and conduct reasonably expeditious operating license hearings if such deliberate and willful behavior is to be tolerated [footnotes omitted].

Id. at 214-215. This appeal followed.

III. Analysis

A. General Principles

One year ago the Commission set forth the principles governing imposition of sanctions. See *Statement of Policy On Conduct of Licensing Proceedings*, CLI-81-8, 13 NRC 452 (1981). This policy statement was prompted by the Commission's recognition that the licensing boards are faced with an unprecedented number of hearings, and the concern that, consistent with fairness, the hearing process should not unnecessarily delay

²² The League submitted interrogatories to the applicant and staff on March 12, 1980, two days after it filed 146 revised contentions. Because the admissibility of those contentions had not then been ruled upon, the interrogatories were opposed as premature under 10 CFR 2.740(b)(1). That rule provides that discovery "shall relate only to those matters in controversy" which have been identified by the presiding officer. On December 19, 1980 the Licensing Board issued its detailed order which ruled for the first time on the admissibility of the revised contentions and provided that "discovery shall commence forthwith upon all issues included in the admitted contentions." 12 NRC at 698. The Board later explained that it intended that provision to dispose of all pending disputes concerning discovery, both as to the scope of controverted issues and the formal commencement of discovery. Nothing remained pending or undisposed of, and it was so understood by the parties.

¹⁵ NRC at 212. Thus, the Board's December 19, 1980 order triggered the onset of discovery. The League was obliged at that time to propound its discovery requests, rather than rely on premature filings.

²³ These latter excuses, the Board said, "cannot be used to justify a pattern of conduct which flouts the Board's orders." 15 NRC at 214.

²⁴ Thus the Board stated: "[T]he League cannot successfully contend that it made its decisions to ignore or challenge the Board's Orders in reliance upon its belief that other boards tolerated such behavior longer. A party cannot repeatedly test a board to see how close it can come to defying orders with impunity, without running some risk of encountering sanctions." *Id.* at 214.

operation of plants that are ready and safe to operate. To help achieve that end, the Commission identified the types of actions that individual licensing boards can take to reduce the time for completing proceedings. Most pertinent to the matter at hand is the general guidance at the outset of the policy statement (*id.* at 454):

Fairness to all involved in NRC's adjudicatory procedures requires that every participant fulfill the obligations imposed by and in accordance with applicable law and Commission regulations. While a board should endeavor to conduct the proceeding in a manner that takes account of the special circumstances faced by any participant, the fact that a party may have personal or other obligations or possess fewer resources than others to devote to the proceeding does not relieve that party of its hearing obligations. When a participant fails to meet its obligations, a board should consider the imposition of sanctions against the offending party. A spectrum of sanctions from minor to severe is available to the boards to assist in the management of proceedings. For example, the boards could warn the offending party that such conduct will not be tolerated in the future, refuse to consider a filing by the offending party, deny the right to cross-examine or present evidence, dismiss one or more of the party's contentions, impose appropriate sanctions on counsel for a party, or, in severe cases, dismiss the party from the proceeding. In selecting a sanction, boards should consider the relative importance of the unmet obligation, its potential for harm to other parties or the orderly conduct of the proceeding, whether its occurrence is an isolated incident or a part of a pattern of behavior, the importance of the safety or environmental concerns raised by the party, and all of the circumstances. Boards should attempt to tailor sanctions to mitigate the harm caused by the failure of a party to fulfill its obligations and bring about improved future compliance. At an early stage in the proceeding, a board should make all parties aware of the Commission's policies in this regard.

It is against these principles that we must measure the League's conduct in this case. In that regard, we consider three questions: (1) what obligations did the Board's orders impose; (2) did the League fail to meet any of its obligations; and (3) if so, what sanction is appropriate? We approach these issues with full recognition that the Licensing Board is entitled to a substantial degree of deference in the management and conduct of proceedings before it. Nevertheless, as we explain below, we differ on certain points with the Board and remand the case to it for further proceedings consistent with this opinion.

B. Board Orders

1. The first of the two orders on which the Board's dismissal action was predicated — that of December 19, 1980 — can be disposed of quickly.²⁵ The gist of that Board memorandum was its ruling on contentions the League sought to litigate. The Board's opinion admitted the majority of the League's contentions and concluded with an order that provided "[t]hat discovery shall commence forthwith upon all issues included in the admitted contentions." 12 NRC at 698. But neither the League nor the applicant pursued *any* discovery until July 8, 1981 — almost seven months later — when Commonwealth Edison submitted its four boilerplate interrogatories to the League. To the extent the Board viewed its order as imposing an affirmative obligation on the parties to undertake any discovery — an exercise of questionable authority at best²⁶ — we see no meaningful distinction between Commonwealth Edison's delinquent conduct and that of the League. Thus, if the Board's dismissal action is to be justified, it must find the support elsewhere.

2. We have already described at length the Board's August 18, 1981 discovery order. See *supra*, pp. 1404-1406. That order rejected the League's grounds for not answering Commonwealth Edison's interrogatories. Taking cognizance of the desirability of a conference between the parties as a means of resolving discovery controversies, however, the Board granted the applicant's motion to compel discovery by the League, "subject to a prompt conference between the parties." 14 NRC at 374.

The League and Commonwealth Edison have rather divergent interpretations of the meaning to be attached to that Board order. The applicant's position is that the Board intended only the *timing* of the League's answers to be open for discussion at the parties' conference.²⁷ The

²⁵ In dismissing the League, the Board found that it had willfully refused to comply with the Board's order of August 18, 1981, and that the nature of the excuses offered for such noncompliance demonstrated a pattern of behavior that seriously impeded the proceeding and threatened the integrity of its orders. 14 NRC at 907. When denying the League's petition for reconsideration the Board elaborated further that the League had "refused to provide the evidentiary bases for its admitted contentions, in spite of the clear mandates of Orders entered December 19, 1980 and August 18, 1981 [footnotes omitted]." 15 NRC at 214.

²⁶ The Board is, of course, empowered to impose cutoff dates for completion of discovery. However, the failure of a party to conduct discovery, while obviously not a wise course of action, is a matter of voluntary choice and does not, we would think, constitute a failure to prosecute its case.

²⁷ App. Tr. 55-56.

League's position, seemingly, is that the only obligation imposed was for the parties to confer.²⁸ We agree with neither of those interpretations.

The Board's directions were given in the context of an opinion that included general discovery guidance offered "[a]s an aid to the parties in conducting discovery fairly and expeditiously." *Id.* at 370. That guidance reflected the Commission's then recent policy statement on the conduct of licensing proceedings, which seeks to minimize the use of interrogatories.²⁹ Along those lines, the Board specifically suggested that depositions might well be preferable to interrogatories (*id.* at 373):

The parties are reminded that interrogatories are not the sole discovery method established by our Rules of Practice (10 CFR §§2.740-2.742). A well-timed deposition can often accomplish more than six months of back-and-forth fencing over interrogatories and answers.

A reasonable interpretation of that passage, and of the August 18 opinion as a whole, is that the Board was suggesting to the parties that they consider not only fixing a date certain for the League's answers to interrogatories, but also proceeding with depositions before pursuing the outstanding interrogatories further. This is not to say, however, that the Board's order had no force if the parties did not agree upon an acceptable sequence of discovery. The Board plainly did more than call upon the parties to confer. If the August 18 order simply ordered the parties to confer, as the League suggests, then the Board would not have ruled upon the propriety of Commonwealth Edison's interrogatories, or rejected the League's excuses, or ordered the interrogatories to be answered subject to a prompt conference between the parties. The League cannot escape the fact that the Board *did grant* Commonwealth Edison's motion to compel

²⁸ Thus, counsel for the League argued before us that the Board "never ordered the interrogatories to be answered." App. Tr. 9. When pressed again, counsel stated, "Well, my obligation under the August 18th order in light of the meetings that I had with counsel was not to answer the interrogatories." App. Tr. 13.

²⁹ Thus the Board set out the following passage from the Commission's policy statement:

The Commission is concerned that the number of interrogatories served in some cases may place an undue burden on the parties, particularly the NRC staff, and may, as a consequence, delay the start of the hearing without reducing the scope or the length of the hearing.

The Commission believes that the benefits now obtained by the use of interrogatories could generally be obtained by using a smaller number of better focused interrogatories and is considering a proposed rule which would limit the number of interrogatories a party could file, absent a ruling by the Board that a greater number of interrogatories is justified. Pending a Commission decision on the proposed rule, the Boards are reminded that they may limit the number of interrogatories in accordance with the Commission's rules.

14 NRC at 371, quoting 13 NRC at 455-56.

answers and directed that "responsive answers shall be filed to these and other interrogatories promptly, and discovery shall be conducted expeditiously" *Id.* at 374 (emphasis added). If, at the conference, the League could not convince the applicant to alter its sequence of discovery, then the League had no option but to answer the interrogatories as propounded or file a motion for a protective order.³⁰ The League did not have the option of doing nothing.

As matters unfolded and as we discussed, *supra*, pp. 1406-1407, the parties did confer in the beginning of September. Whether an agreement was reached for the League to answer Commonwealth Edison's interrogatories by a date certain is disputed. There is also disagreement about whether Commonwealth Edison voluntarily deferred from insisting upon answers from the League until after it had furnished the League certain information. Were we obliged to resolve those disputes we would have no hesitancy in finding the League's version inherently incredible.³¹

³⁰ The Board's discovery guidance also advised the parties as follows (14 NRC at 372):

Objections to interrogatories or document requests shall be set forth in an appropriate motion for protective order, accompanied by points and authorities sufficient to enable the Board to rule immediately upon receipt of the opposing party's answer to be filed within ten (10) days (10 CFR §§2.718, 2.730, 2.740, 2.740b, 2.741).

Presumably the League could have argued that Commonwealth Edison was unreasonable in insisting upon answers to interrogatories as the first step. Alternatively, perhaps the League could have sought additional time in which to answer the interrogatories. While the Board's order had not fixed a date certain for the answers, its insistence that the parties hold their conference promptly, coupled with a scheduling order that set a November 1 cutoff date for all discovery under the August 18 order, would lead a reasonable person to understand that the League was under an obligation to answer the interrogatories very soon after the parties' conference.

³¹ The applicant's version, supported by several affidavits, is that at the parties' September 10 meeting Mr. Cherry insisted that Commonwealth Edison provide information the League had requested in connection with the state regulatory proceeding before the League would answer the applicant's interrogatories in the NRC proceeding. Commonwealth Edison refused to make such an agreement and pressed Mr. Cherry for a date certain when the League would answer the pending interrogatories. Mr. Cherry refused to provide a date but promised to provide one the following week. See Affidavits of Paul M. Murphy at 4-5; Alan P. Bielawski at 3-4; Leslie A. Bowen at 4; Tom Robert Tramm at 3-4; James T. Westermeier at 3; Kenneth A. Ainger at 2; and John M. Lavin at 3, attached as Exhibits 1-3, 5-8, respectively, to Commonwealth Edison's Opposition to the League's Petition for Reconsideration (November 23, 1981).

Thereafter at a September 15 meeting between Mr. Cherry and Mr. Murphy, Commonwealth Edison's counsel (attended in part by Messrs. Miller and Bielawski for Commonwealth Edison as well), Mr. Cherry stated that he would answer the interrogatories in the NRC proceeding by October 1, 1981. Mr. Murphy followed up that discussion with a September 16 letter to Mr. Cherry specifically noting the fact that the previous day Mr. Cherry had "agreed to provide answers . . . [to Commonwealth Edison's interrogatories] by October 1, 1981." See 14 NRC at 911. Mr. Cherry made no response to that letter until after Commonwealth Edison filed its Motion for Sanctions on October 2. In sum, the applicant's

(CONTINUED)

As it turns out, however, these controversies between the parties are beside the point. For it is quite plain that whatever agreements or under-

version is that it insisted upon its right to have its interrogatories answered, that it rejected any link between NRC discovery and discovery before the state commission, and that Mr. Cherry breached his agreement to provide answers by October 1.

Mr. Cherry's version, supported by his verified pleading, is that, during repeated telephone conversations and face-to-face meetings, he and Mr. Murphy agreed that the League's answering the interrogatories would be contingent upon the receipt of certain other information from Commonwealth Edison. League Response to Motion for Sanctions (October 13, 1981) at 1-2. Mr. Cherry's pleading attached a September 16 letter from him to Mr. Murphy in which Mr. Cherry summarized the agreements reached in that regard. The letter reflects that Commonwealth Edison was to provide Mr. Cherry by September 28 answers to interrogatories the League had propounded in the state regulatory proceeding. Commonwealth Edison was also to provide the League certain documents in connection with a September 22 deposition of a Mr. Bukovski, who was a prospective witness on financial matters in the state proceeding.

At oral argument we advised Mr. Cherry that the allegedly conditional nature of the League's obligation to furnish answers to the interrogatories was not apparent from any of the documentary evidence in the case. Mr. Cherry then responded that the agreement, at least as he understood it, was an oral one, that it is "pretty hard these days to be found guilty of perjury," and that it was possible "that the lawyers had an ordinary, good faith lawyers' disagreement." App. Tr. 75-76.

We find the League's version not worthy of being credited for several reasons. First, the September 16 letter of Mr. Murphy to Mr. Cherry reflects an unconditional agreement by Mr. Cherry to answer Commonwealth Edison's interrogatories by October 1. See 14 NRC at 911. It is reasonable to believe that if Mr. Cherry considered that representation to be erroneous, he would have said as much in writing. There is no paucity of letter-writing between Messrs. Murphy and Cherry, and indeed the correspondence continued in the latter half of September on lesser issues. Especially in light of the Board's August 18 order putting the League under an obligation to answer the interrogatories promptly, it is fair to infer that so critical a "misunderstanding" on Mr. Murphy's part would have drawn swift and certain correction from Mr. Cherry.

Second, the information that Mr. Cherry claims was necessary for the League's answers to interrogatories was to be supplied by Commonwealth Edison on September 28. See League Response to Motion for Sanctions (October 13, 1981) at 1-2 and Exhibit A. Under Mr. Cherry's version of the agreement he then was to furnish the applicant answers by October 1, three days later. Yet at various times in the league's brief we are told that to answer Commonwealth Edison's interrogatories "would require *in excess of two hundred hours of work, or five normal full-time work weeks . . .*" Brief in Support of Exceptions to Orders Dated October 27, 1981 and January 27, 1982 (March 22, 1982) at 7 (emphasis in original). See also *id.* at 18. It is not credible that the assertedly tedious five-week task could have been accomplished in three days if only Commonwealth Edison had supplied the League with information that in any event would have been of doubtful relevance. (The applicant's interrogatories asked for information bearing upon the League's contentions, prospective witnesses, their qualifications, and the substance and documentary support for their testimony. See *supra*, n.4.)

Third, we note that Mr. Cherry's version is without documentary support. In light of the frequency of exchanges between counsel memorializing their agreements and disagreements, we would have expected Mr. Cherry to have contemporaneous written substantiation of his "agreement" with Commonwealth Edison. Yet his own letter of September 16 clearly refers to only the state proceeding and fails to mention the critical fact of the allegedly conditional nature of the League's agreement to respond to the interrogatories.

standings counsel may have had ceased as of September 18.³² For our purposes it is immaterial what caused this breach. What matters is that as of September 18 the parties had conferred pursuant to the Board's August 18 order and had been unable to reach any extant agreement on discovery. That state of affairs meant that the League was under an obligation, imposed by the August 18 order, either to answer the applicant's interrogatories or to move for a protective order. It did neither. The League's failure to answer Commonwealth Edison's interrogatories at that stage constituted a patent violation of the Board's discovery order.³³

C. Sanctions

The Commission's policy statement on the conduct of licensing proceedings establishes a graduated scale of sanctions, reserving dismissal for the most severe failure of a participant to meet its obligations. In selecting a sanction the boards have been instructed to consider

the relative importance of the unmet obligation, its potential for harm to other parties or the orderly conduct of the proceeding, whether its occurrence is an isolated incident or a part of a pattern of behavior, the importance of the safety or environmental concerns raised by the party, and all of the circumstances. Boards should attempt to tailor sanctions to mitigate the harm caused by the failure of a party to fulfill its obligations and bring about improved future compliance.

³² Mr. Murphy's letter of that date to Mr. Cherry concluded as follows:

Given that you have decided to withdraw from your previous agreement to produce the witnesses for the taking of their depositions, Edison has determined that it is appropriate to withdraw from its agreements on discovery. We intend to file with the [Illinois Commerce] Commission shortly the appropriate papers to obtain a ruling from the Commission on how, if at all, this proceeding should go forward. In the meantime, you may take this letter as notice that Edison will not voluntarily respond to any discovery originated by the League in this proceeding until such matters are resolved. Letter of Paul M. Murphy to Myron Cherry, *supra*, n.16.

³³ At oral argument Mr. Cherry conceded that "perhaps after that meeting fell down I should have moved for a protective order. I cannot give you any solid reason why I did not." App. Tr. 15. Counsel then sought to excuse his lack of action on grounds of the press of other litigation, and the fact that the Board's discovery order did not impose a date certain for the League's answers. App. Tr. 15-17.

Counsel's other engagements provide no justification, especially when the issue at hand is as serious as a failure to comply with an outstanding Board order. With regard to the absence of a date certain for answering the interrogatories, the need for prompt compliance can readily be inferred from the November 1 discovery cutoff date the Board had imposed. The absence of a date certain for answers to interrogatories may have some bearing on the question of sanctions (see *infra*, p. 1418) but does not excuse the League's total failure to respond to Commonwealth Edison's interrogatories.

13 NRC at 454. Our consideration of the factors enumerated in the policy statement leads us to conclude that the League's conduct in this case warrants a serious sanction, but not one so severe as dismissal.

1. There should be no misunderstanding: we consider the failure to comply with a board order a very serious matter indeed, injurious to the proper conduct of NRC licensing proceedings. This is especially so when the order at issue is a discovery order, for failure to comply with an order of that kind can wholly prevent a proceeding from getting off the ground. As we explained in *Pennsylvania Power and Light Co.* (Susquehanna Steam Electric Station, Units 1 and 2), ALAB-613, 12 NRC 317, 334-35 (1980):

"Pleadings" and "contentions" no longer describe in voluminous detail everything the parties expect to prove and how they plan to go about doing so. Rather, they provide general notice of the issues. It is left to the parties to narrow those issues through use of various discovery devices so that evidence need be produced at the hearing only on matters actually controverted. This is why curtailing discovery tends to lengthen the trial — with corresponding increase in expense and inconvenience for all who must take part [footnote omitted].

Not only does the failure to fulfill discovery obligations unnecessarily delay a proceeding, it is also manifestly unfair to the other parties. We reiterate the pointed comment of the Licensing Board in *Northern States Power Co.* (Tyrone Energy Park, Unit 1), LBP-77-37, 5 NRC 1298, 1300-01 (1977) (previously quoted with approval in *Susquehanna*, 12 NRC at 338):

The Applicants in particular carry an unrelieved burden of proof in Commission proceedings. Unless they can effectively inquire into the positions of the intervenors, discharging that burden may be impossible. To permit a party to make skeletal contentions, keep the bases for them secret, then require its adversaries to meet any conceivable thrust at hearing would be patently unfair, and inconsistent with a sound record [footnote omitted].

The League's failure to comply with the Board's discovery order in this case effectively stalled the proceeding in its tracks. The League proffered an extraordinarily large number of contentions, skeletal in outline, and refused to divulge any information whatsoever about any of the 114 contentions admitted by the Board. A board cannot move a proceeding forward, and a party cannot prepare its case, in the face of that kind of obstructionism. The League's obligation to answer Commonwealth Edison's interrogatories was an important one; a deliberate failure to meet it is worthy of serious sanction.

2. The Licensing Board thought that the League's conduct in not answering the interrogatories was part of a pattern of recalcitrance. We see a less distinct pattern, and one in which the League is not the only participant in the process that has been the cause of delay. It is principally for this reason that we differ with the Board on its choice of sanctions.

The pattern of League conduct identified by the Board encompassed (1) not initiating discovery when contentions were first admitted, (2) not answering any of the interrogatories that had been outstanding since July 1981, and (3) giving the flimsiest of reasons for not complying with the Board's discovery order. See 14 NRC at 907; 15 NRC at 214-215. We have already explained, *supra*, p. 1412, why the League's failure to initiate discovery cannot be held against it and does not provide an acceptable basis for distinguishing between the League's conduct and that of Commonwealth Edison. If the League wanted to walk into a hearing uninformed about the applicant's case, or thought it could resist a motion for summary disposition without having conducted discovery, it presumably was free to make those strategic decisions. But while one might question the usefulness of the League's participation on that basis, the League's casualness falls short of evincing a pattern of delay. After all, it is within the Board's power to impose a reasonable cutoff date for discovery. The exercise of that scheduling power (which the Board did exercise eight months thereafter on August 19, 1981) could have obviated delay in that regard.

So too we find less obvious than the Licensing Board the asserted fact that the League had not "furnished ordered discovery for a long period of time." 14 NRC at 907. We have already concluded that under the Board's discovery order the League's unequivocal obligation to answer the interrogatories was not triggered until September 18, when the parties' discovery agreements fell through. (The discovery order had not itself fixed a date certain for answers, or made the obligation to answer unconditional without regard to a conference between the parties.) In these circumstances the League's failure to answer interrogatories, while not excusable, was nevertheless not of exceptionally long duration.

While we agree with the Board that the repetitive nature of the League's excuses for failing to respond to discovery, coupled with the *total* failure to respond to any part of the interrogatories, support the finding of a pattern of delay, we are also constrained to note that the League was not the sole cause of delay. Both the applicant and the Board itself contributed in some measure. The applicant waited seven months after the Board's ruling on contentions before it initiated discovery. See *supra*, p. 1412. The Board did not issue its ruling on contentions and its denial of the applicant's petition for reconsideration of that ruling until nearly eight and

six months, respectively, after the parties' submissions — action that can hardly be characterized as prompt.³⁴ In sum, we think the Board has overstated the League's delaying tactics and overlooked the fact that the League was not alone in failing to move the proceeding along.

3. The Commission's policy statement also calls upon its adjudicatory boards to consider the importance of the safety or environmental issues raised when assessing sanctions. This factor is of more importance during the later stages of a proceeding when the contentions have been fleshed out and the parties have submitted testimony. Here, where there is little but the bare contentions upon which to rely, this factor is of much lesser weight and not at all decisive. That the League pursued no discovery of its own before its dismissal hardly portends that it will make a significant contribution to the proceeding, whatever may be the abstract importance of its contentions. Similarly, the fact that fully a third of the admitted contentions were copied almost verbatim from those in another proceeding tends to show that more ink than thought went into their preparation. On the other hand, the League supported its 10 CFR 2.206 request with affidavits of expert witnesses on unresolved safety problems and quality assurance and control issues thought pertinent to the Byron facility. See *supra*, n.12. This latter effort affords some basis for believing that the League might well contribute to this proceeding, at least on a narrow group of issues.

4. Lastly, the policy statement asks the boards to consider all of the circumstances and to tailor sanctions to mitigate the harm caused by a party's failure to fulfill its obligations.

We have previously discussed our reasons for concluding that the sanction of dismissal is too severe given all the circumstances of this case. See *supra*, pp. 1416-1420. However, the League's violation of the Licensing Board's discovery order has had the effect of freezing this proceeding

³⁴ The League filed revised contentions on March 10, 1980, the applicant and staff answered on April 18 and 25, respectively, and the Board issued its ruling on December 19, 1980. We recognize that the length and complexity of the contentions made ruling upon them far from simple, and we are not knowledgeable about the other matters the Board may have been working on during that time. All things considered, however, it is important to expedite rulings on contentions precisely so discovery can begin. We think a prompter ruling could have been expected.

Commonwealth Edison's petition for reconsideration was filed on February 13, 1981 and the Board's ruling issued on August 18, 1981. Responses to the petition were filed by the staff on March 3 and by the League on April 13. We do not think the Board is obliged to await responses to a petition for reconsideration before issuing a ruling unless it believes it will be helped by such responses. The typical judicial practice is that responses to petitions for reconsideration will not even be accepted for filing unless a response has been called for by the court. In any event, the four months between the League's response and the Board's ruling would likewise appear to be an inordinate amount of time for ruling on reconsideration.

at its earliest stages.³⁵ The applicant should not be penalized by that wrongful conduct. If the Byron plant is not to begin operation when it is ready, that should be as a result of a serious safety or environmental issue and not because the proceeding has been unjustifiably delayed by the League's failure to comply with the Licensing Board's discovery order. Therefore, consistent with the Commission's policy statement permitting dismissal of one or more of a party's contentions (13 NRC at 454), we limit the number of contentions the League can litigate to that number the Licensing Board concludes it can comfortably decide on the merits without unjustifiably delaying operation of the Byron facility.³⁶ This disposition, which no doubt will severely restrict the contentions the League will be entitled to press, also assures that the League must revise its broadside approach so as to concentrate on those few contentions it is best prepared to advance.³⁷ We believe this approach is most likely to lead to a useful examination of important safety or environmental issues.

³⁵ So too, the League's laxity in even drawing up its contentions has worked its toll. The League did not submit its revised contentions until six and one-half months after the Board's prehearing conference and four and one-half months after it had promised to submit them. See *supra*, n.2, and letter of Myron Karman to the Licensing Board (October 12, 1979), attached as Exhibit 11 to Commonwealth Edison's Opposition to the League's Petition for Reconsideration (November 23, 1981). While we recognize that the League was not represented by counsel for much of that period, the obligation to submit contentions is at bottom an obligation of the party itself, not of counsel.

³⁶ It is our understanding that the applicant expects the facility to be ready for fuel loading towards the end of 1983. App. Tr. 65-66. To the extent that the League has serious contentions to raise that cannot be litigated within this anticipated time frame, we repeat what 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):

an 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].

³⁷ The choice of which contentions the League may still litigate is for the League to decide in the first instance, subject to the time constraint we have identified. In other words, the League is to rank its contentions individually for the Licensing Board and the Board will then limit them based upon its understanding of the time needed to litigate those issues. (We would not be surprised if fewer than ten contentions can be timely heard, but that will be a determination for the Licensing Board to make in its informed discretion.) The Board may also modify to more acceptable form contentions such as those that were admitted subject to revision upon issuance of the staff's safety evaluation report and final environmental statement — documents that have since issued.

The Board is, of course, similarly empowered to impose stringent time limits on any discovery the League may undertake. In deciding the number of contentions the League may litigate, the Board should bear in mind the expected duration of League discovery as well as further discovery that Commonwealth Edison no doubt will undertake.

We are also aware of the fact that even at this late date the League has *totally* failed to answer Commonwealth Edison's interrogatories. At oral argument on May 13 we advised the League that if it were to be readmitted to this proceeding it could expect answers to those interrogatories to be required within less than one week from the date of our decision. See App. Tr. 27, 73. The League has had both ample time and warning to prepare answers to interrogatories that were first propounded nearly one year ago. Moreover, our restriction on the number of contentions that can be pursued has the secondary effect of easing the League's task in answering the interrogatories.³⁸ Therefore, the answers are to be in the hands of counsel for Commonwealth Edison *no later than June 24, 1982*. The Licensing Board is to strike any contention for which an interrogatory is not fully answered.³⁹

Finally, we take cognizance of the League's concession that, if it were found to be at fault in not complying with the Board's discovery order, dismissal would be appropriate.⁴⁰ We have not enforced that concession in this opinion. But no further failings on the League's part will be tolerated.

It is so ORDERED.

FOR THE APPEAL BOARD

C. Jean Shoemaker
Secretary to the Appeal Board

³⁸ As indicated *supra*, n.4, the interrogatories are contention specific.

³⁹ In this regard we also want to make clear that the very general response to interrogatories alluded to by League counsel at oral argument will *not* suffice. App. Tr. 23-26. 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). A broad statement that the information sought by an interrogatory is to be found in a mass of documents is also insufficient. *Harlem River Consumers Coop., Inc. v. Associated Grocers of Harlem, Inc.*, 64 F.R.D. 459, 463 (S.D.N.Y. 1974). 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). See also *Nagler v. Admiral Corp.*, 167 F. Supp. 413 (S.D.N.Y. 1958). Where an interrogatory seeks the names of expected expert witnesses, the nature of their testimony, and the substance of their opinions, the responding party may not stop at merely identifying its experts; it must provide all the information requested. See *Bates v. Firestone Tire & Rubber Co.*, 83 F.R.D. 535, 538, 539 (D.S.C. 1979).

⁴⁰ As counsel for the League exaggeratedly put it, "If I am found to have been at fault, cut my head off." App. Tr. 71. The League, of course, argued it was not at fault. We have found to the contrary.

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 OL
50-353 OL**

**PHILADELPHIA ELECTRIC
COMPANY
(Limerick Generating Station,
Units 1 and 2)**

June 1, 1982

In a prehearing conference order, a Licensing Board determines standing to intervene and admissibility of contentions in an operating license proceeding.

RULES OF PRACTICE: INTERVENTION PETITIONS

Petitioners for intervention must set forth in their petitions their interest in the proceeding, the reasons why they should be permitted to intervene, and the specific aspects of the subject matter as to which intervention is sought.

RULES OF PRACTICE: STANDING TO INTERVENE

Intervention as a matter of right is governed by current judicial concepts of standing. The intervention petition must disclose injury in fact and an interest arguably within the zone of interests protected by the statute. *Portland General Electric Co.* (Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610, 612-13 (1976).

RULES OF PRACTICE: CONTENTION REQUIREMENT FOR INTERVENTION

To be granted intervenor status, a petitioner must advance at least one admissible contention.

ATOMIC ENERGY ACT: STANDING TO INTERVENE (INJURY IN FACT)

An alleged injury to health and safety may satisfy the requirement of injury in fact although it is shared equally by all those residing near the reactor.

RULES OF PRACTICE: DISCRETIONARY INTERVENTION

It is within the Licensing Board's discretion to grant intervention although a petitioner has failed to satisfy requirements for intervention as a matter of right. *Portland General Electric Co.* (Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610, 616 (1976).

RULES OF PRACTICE: STANDING TO INTERVENE

For an organization to have standing, it must show injury either to its organizational interests or to the interests of members who have authorized it to act for them. If it depends on injury to its members' interests, the organization must provide the identity of at least one injured member, a description of the injury, and an authorization for the organization to represent the member in the proceeding. *Houston Lighting and Power Co.* (Allens Creek Nuclear Generating Station, Unit 1), ALAB 535, 9 NRC 377, 390-96 (1976).

ATOMIC ENERGY ACT: STANDING TO INTERVENE (INJURY IN FACT)

The possibility that a Licensing Board would require or approve of surveillance of those opposed to a nuclear power plant as a condition for granting an operating license is so speculative that it will not satisfy the requirement of injury in fact.

ATOMIC ENERGY ACT: STANDING TO INTERVENE (ZONE OF INTERESTS)

An injury to First Amendment rights due to Licensing Board approval of surveillance of opponents of nuclear power would be within the zone of interests of the statutes involved in nuclear licensing proceedings.

RULES OF PRACTICE: STANDING TO INTERVENE

Residence 120 miles from a nuclear plant coupled with intermittent visits within 50 miles of the site does not establish an interest sufficient for intervention as a matter of right.

RULES OF PRACTICE: STANDING TO INTERVENE

Allegations of injury resulting from radon emissions attributable to milling and mining operations over a thousand miles from petitioner's residence are insufficient to establish standing.

RULES OF PRACTICE: ADMISSIBILITY OF CONTENTION

A contention concerning the health effects of radon emissions will be admitted only if the Licensing Board is provided the documented opinion of one or more qualified authorities that the incremental effects of fuel-cycle related emissions will be greater than those determined by the Appeal Board in its consolidated radon proceeding. *Philadelphia Electric Co.* (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-654, 14 NRC 632, 635 (1981).

RULES OF PRACTICE: PARTICIPATION BY AN INTERESTED STATE OR LOCAL GOVERNMENT

Interested local governmental representatives may participate in hearings without submitting contentions. They may raise, in a timely manner and with sufficient specificity and detail to permit evidentiary determinations, issues which concern them. They need not take a position on such issues.

**NEPA: SCOPE OF ENVIRONMENTAL ANALYSIS
(REQUIREMENTS)**

NEPA does not mandate that environmental issues considered in the construction permit proceeding be considered again in the operating license proceedings, absent new information.

**NEPA: SCOPE OF ENVIRONMENTAL ANALYSIS
(REQUIREMENTS)**

Reconsideration at the operating license stage of matters considered under NEPA at the construction permit stage is not necessitated by intervening amendments to the National Historic Preservation Act and the Endangered Species Act unless the amendments change the environmental impact of the action.

NEPA: RULE OF REASON

The rule of reason which applies to NEPA means that underlying scientific data and inferences drawn from it through the exercise of expert scientific evaluation may be adopted by the NRC from the NEPA review done by another federal agency. The NRC must exercise independent judgment with respect to conclusions about environmental impacts based on interpretation of such basis facts.

NEPA: SEGMENTATION

The portion of a water supply system utilized solely by a local government agency need not be considered by NRC in its environmental review. However, all impacts of jointly utilized parts of the system must be considered by NRC unless a rational method can be developed for determining which impacts are attributable solely to the plant. Parts of the system utilized solely by the plant must be considered by NRC.

LICENSING BOARD: JURISDICTION

A Licensing Board does not have jurisdiction to consider in an operating license proceeding the environmental impacts of construction, but it does have jurisdiction to consider the operational environmental impacts of construction changes.

LICENSING BOARD: JURISDICTION

A Licensing Board has jurisdiction to consider contentions concerning a probabilistic risk assessment when the NRC staff uses that assessment in its review of an application.

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SPECIAL PREHEARING CONFERENCE ORDER

I. INTRODUCTION AND BACKGROUND

On August 21, 1981, notice was published in the *Federal Register* that the Nuclear Regulatory Commission (NRC or Commission) had received an application from the Philadelphia Electric Company (Applicant or PECO) for operating licenses for the Limerick Generating Station. 46 Fed. Reg. 42557 (1981). The notice stated that any interested person could file a petition for leave to intervene. Several such petitions were received.

On October 14, 1981, this Board issued an order indicating that petitioners were to "use their best efforts to coordinate the filing of contentions" and to file a joint statement of contentions if possible. In the same order, the Board requested more information from several petitioners. On November 9, 1981, the Board ordered that Clarence Wells,¹ Samuel and Clarissa Cooper,² Steven Levin, and Helene Greenstein not be considered petitioners for intervention in light of their failure to respond to its order of October 14 to clarify whether they were seeking intervention or making a limited appearance statement pursuant to 10 CFR §2.715(a). At that time, the Board also indicated that a letter received from Charles Bruce Taylor would be considered a limited appearance statement unless he filed a response by November 17, 1981. Having received nothing further from Mr. Taylor, the Board rules that he is not a petitioner for intervention in this proceeding.

¹ The Board subsequently received a letter from Mr. Wells dated November 2, 1981 indicating that he did not wish to participate in this proceeding.

² Subsequent to our order of November 9, 1981, as reflected in our "Memorandum and Order Specifying Agenda for Special Prehearing Conference" at 2 (December 24, 1981), we received a series of letters from the Coopers. These letters did nothing to clarify whether they were seeking status as intervenors, despite our request that they provide such clarification. Notwithstanding this, our order of December 24, 1981 gave the Coopers another chance to attend the special prehearing conference and "... explain whether they intend to seek formal status as intervenors, and if so to explain why they apparently have ignored the Board's previous orders." By letter dated January 2, 1982 (See Tr. 22-23), the Coopers declined the opportunity to appear at the prehearing conference. The letter again failed to clarify the status they are seeking. However, it set forth in terms clearer than their previous letters that their asserted interest is not in impacts from the facility, but rather as ratepayers interested in the economic effect on the customers of the Applicant. (A review of a map discloses that the Coopers' home, Colora, Maryland, is about fifty miles from the facility. According to the Coopers, they are electrical customers of the Applicant.) Even if we assume *arguendo* that the Coopers are seeking to intervene, and if we further ignore *arguendo* their disregard of Board orders and the schedule for contentions, their asserted interest as ratepayers is not cognizable in this radiological health and safety and environmental proceeding. *Portland General Electric Co.* (Pebble Springs, Units 1 and 2), CLI-76-27, 4 NRC 610, 614 (1976). Accordingly, the Coopers are not permitted to intervene as a party to this proceeding.

Contentions were filed by petitioners, who had coordinated as requested by the Board, in a single filing dated November 24, 1981. In addition, the Environmental Coalition on Nuclear Power (ECNP) filed two of its own contentions in a filing dated November 22, 1981. In that filing, ECNP also indicated it wished to adopt as its own all the contentions in the filing of the coordinated intervenors.

A Special Prehearing Conference was held January 6-8, 1982 to consider the contentions and to clarify certain matters concerning the status of petitioners. All petitioners were present or represented except for Mr. John Shniper.³

This order, addressing matters considered at the prehearing conference, rules on the petitions for intervention and the admissibility of the proposed contentions.

II. STANDING

A. General Principles

Commission regulations require that petitioners for intervention set forth in their petitions their interest in the proceeding, how that interest might be affected by the result of the proceeding, the reasons why they should be permitted to intervene, and the specific aspects of the subject matter as to which intervention is sought. 10 CFR §2.714(a)(2).⁴ Whether the interests

³ Subsequently, in response to an Order Directing Petitioner John Shniper to Show Cause Why He Should Not Be Dismissed For Default (Jan. 27, 1982), Mr. Shniper explained that his failure to attend was caused by his father's death on January 4, 1982. See Response to Show Cause Why He Should Not Be Dismissed For Default (Feb. 1, 1982). While we understand that Mr. Shniper was not thinking about this proceeding at such a time, we expect parties who are unable to attend a hearing in which they are expected to participate to notify the Board in advance of the circumstances. Should that prove to be impractical, as in this instance, we expect the party to provide the Board with an explanation as soon afterwards as possible.

⁴ As indicated in our Order of October 14, 1981, at 13-14, this Board believes that a petition cannot be dismissed in advance of the time provided by the 10 CFR §2.714(b) of the regulations on the grounds that the petition has failed to set forth the specific "aspects" of the subject matter of the proceeding as to which petitioner wished to intervene pursuant to Section 2.714(a)(2). The responses of the Staff and Applicant which we invited disagree with the Board's view, but fail to support their disagreement with any legal prescription or practical effect under Section 2.714. There appears to be no dispute that contentions supersede the more preliminary phase of "aspects." Since we are ruling on both standing and contentions in this order, the need to decide whether there were adequate "aspects" originally set forth by petitioners is moot. However, even if we had ruled on standing prior to contentions, we would have done so based solely on asserted interests, subject to satisfaction

(CONTINUED)

alleged are sufficient for intervention as a matter of right is governed by current judicial concepts of standing. *Portland General Electric Co.* (Pebble Springs Nuclear Plant, Units 1 and 2), CLI-76-27, 4 NRC 610, 612 (1976). Under these standards, the petition must disclose "injury in fact" and an interest "arguably within the zone of interests" protected by the statute. *Id.* at 613. In addition to demonstrating standing, a petitioner must advance at least one admissible contention in order to be permitted to intervene in the proceeding. 10 CFR §2.714(b); *Mississippi Power and Light Co.* (Grand Gulf Nuclear Station, Units 1 and 2), ALAB-130, 6 AEC 423, 424 (1973).

Applicant argues that the requirement of injury in fact can be satisfied only by a demonstration that a petitioner has suffered an injury markedly different from that suffered by everyone residing close to the reactor. *See* Applicant's Answer to Marvin I. Lewis Petition to Intervene (September 18, 1981); Tr. 88-95.

Applicant admits that residence in close proximity to the reactor site has been held by the Appeal Board to create, at a minimum, a presumption of standing to intervene, but Applicant argues that this must be coupled with a "personalized showing" of harm. For this proposition, Applicant cites the Commission decision in *In re Ten Applications for Low-Enriched Uranium Exports to EURATOM Member Nations* (Transnuclear, Inc), CLI-77-24, 6 NRC 525, 530-31 (1977), and the Opinion of Chairman Ahearne and Commissioner Hendrie in *Westinghouse Electric Corp.* (Export to South Korea), CLI-80-30, 12 NRC 253, 258 (1980).

It is true that the Supreme Court in *Warth v. Seldin*, 422 U.S. 490 (1975), said that "when the asserted harm is a 'generalized grievance' shared in substantially equal measure by all or a large class of citizens, that harm alone does not warrant exercise of jurisdiction." *Id.* at 499. That principle, however, has been applied when virtually every American shares the generalized grievance. *See, e.g., Valley Forge Christian College v. Americans United for Separation of Church and State, Inc.*, 454 U.S. 464 (1982) (no standing as citizens whose constitutional rights under the Establishment Clause had been violated by transfer of government property to religiously affiliated school); *Schlesinger v. Reservists Committee to Stop the War*, 418 U.S.

of the later requirements of Section 2.714 that at least one contention be set forth. Arguably, in a situation where a petitioner is seeking discretionary intervention, identification of "aspects" at the time of the original petition setting forth interests would aid a Board's inquiry. However, in practice, close decisions on discretionary intervention require inquiry into the greater detail included in a contention, as compared to the summary labeling of an "aspect" of the subject matter.

208 (1974) (no standing as citizens to sue over violation of Incompatibility Clause resulting from members of Congress holding commissions in the military reserves); *United States v. Richardson*, 418 U.S. 166 (1974) (no standing as voter to challenge parts of CIA Act as violative of the Accounting Clause); *Frothingham v. Mellon*, 262 U.S. 447 (1923) (no standing as taxpayer to challenge, as unconstitutional, the Maternity Act).

In *Valley Forge Christian College*, *supra*, the Supreme Court explained that its holding that respondents lacked standing avoided a situation in which every citizen would have standing to challenge any governmental action as unconstitutional. 454 U.S. at 484, n.26. Similarly, in the *Transnuclear* case, the Commission indicated that if standing had been granted to petitioners, it would have meant that all United States citizens could have standing. 6 NRC at 531.⁵

The injuries which may be caused by residence in proximity to the Limerick reactor are not so universal that any United States citizen may suffer them. Petitioners residing at great distances from reactor sites have been found not to be threatened with injury to their health or safety. See *Dairyland Power Cooperative* (LaCrosse Boiling Water Reactor), ALAB-497, 8 NRC 312, 313 (1978) (residence 75 miles from site not sufficient interest for standing as a matter of right); *Public Service Co.* (Black Fox Units 1 and 2), ALAB-397, 5 NRC 1143, 1150 (1977) (intervention denied to petitioner residing 125 miles from site). It is only residents living in close proximity to a reactor who are presumed to be threatened with injury by it. See *Virginia Electric and Power Co.* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-522, 9 NRC 54, 56 (1976). So far as this Board is aware, standing based on residence alone has never been extended beyond fifty miles.⁶

Although the Supreme Court has indicated that a generalized grievance is not sufficient injury to warrant standing, it has also recognized that the fact that many others are similarly injured should not preclude standing. In *United States v. Students Challenging Regulatory Agency Procedures (SCRAP I)*, 412 U.S. 669 (1973), the Court stated, "To deny standing to

⁵ In addition, the Commission found that Petitioners in the *Transnuclear* case had failed to establish a causal link between the NRC action and their alleged injury. See 6 NRC at 531-32. In order for there to be injury in fact sufficient for Constitutional standing, the injury must be fairly traceable to the challenged conduct. See *Duke Power Co. v. Carolina Env'tl Study Group*, 438 U.S. 59, 72 (1978); *Simon v. Eastern Ky Welfare Rights Organization*, 426 U.S. 26, 41 (1976).

⁶ Fifty miles has been held to be "not so great [a distance] as necessarily to have precluded a finding of standing based upon residence . . .". See *Tennessee Valley Authority (Watts Bar Nuclear Plant, Units 1 and 2)*, ALAB-413, 5 NRC 1418, 1421, n.4 (1977).

persons who are in fact injured simply because many others are also injured, would mean that the most injurious and widespread government actions could be questioned by nobody. We cannot accept that conclusion." *Id.* at 688. *SCRAP I* involved esthetic (impact of litter) and health (increased air pollution) injuries. Such injuries are much more akin to the environmental, health, and safety injuries commonly alleged in a nuclear licensing case than are the injuries to an individual's right to a government acting Constitutionally which the Supreme Court has rejected as a basis for standing.

The Commission and the Appeal Board have similarly recognized that an injury may be shared by many and still form the basis for standing. See *Edlow International Co.* (Agent for the Government of India on Application to Export Special Nuclear Material), CLI-76-6, 3 NRC 563, 576 (1976); *Duke Power Co.* (Catawba Nuclear Station, Units 1 and 2), ALAB-150, 6 AEC 811, 812-13 (1973). Although the alleged injury to health and safety may be shared equally by all those residing near the reactor, it can form the basis for standing. Intervention is clearly contemplated in nuclear licensing proceedings, but if nearby residents fearing for their health and safety cannot establish standing to intervene, who can do so?

Both the *Transnuclear* and the *Westinghouse* cases, cited by Applicant in support of the position that residence near the plant is insufficient for standing, involve export licensing. The Applicant suggests that the Commission has not distinguished standing requirements for export licensing from standing requirements for other proceedings. We disagree. The Commission has recognized that export licensing matters involved "sensitive questions of the nation's conduct of foreign policy" and that "[t]he accommodation of deeply felt national interests requires a process of international negotiation, clarification and adjustment which does not fit an adjudicatory format or timetable." *Edlow International*, 3 NRC at 570, See also, *Transnuclear*, 6 NRC at 530. In deciding to take, therefore, a restrictive view of standing for matters of export licensing the Commission distinguished licensing proceedings for domestic reactors, noting, "for domestic licensing our licensing boards have recognized claims of risk which may be considered somewhat remote as a basis for intervention." In addition, analogizing FCC procedures for granting a broadcast license to NRC procedures for granting a domestic license, the Commission distinguished them from export licensing procedures by stating:

The proceeding there saw the FCC in its central licensing function, comparable to a construction permit proceeding before this agency, and a function in which adjudication was the expected and appropriate mode of decision. The petitioners there, repre-

sentatives and residents of *local* viewers, had a direct and personal stake in the outcome which sharply differentiated them from the nation's citizenry as a whole. Here adjudication is not a normal mode, in part because of the foreign relations considerations.

Edlow International, 3 NRC at 571 (emphasis added).

In conclusion, residence near a nuclear power plant, coupled with allegations of threatened injury to health and safety or the environment of the petitioner, is sufficient to establish the interest necessary to intervene in an operating license proceeding.

If a petition does not disclose sufficient interests for the petitioner to be granted intervenor status as a matter of right, intervention may still be granted at the discretion of the Board. *Pebble Springs*, 4 NRC at 616. Such discretionary intervention is more readily granted when "petitioners show significant ability to contribute on substantial issues of law or fact which will not otherwise be properly raised or presented, set forth these matters with suitable specificity to allow evaluation, and demonstrate their importance and immediacy, justifying the time to consider them." *Id.* at 617. Some of the factors to be considered in deciding whether discretionary intervention is warranted are:

- (1) the extent to which the petitioner's participation will assist in developing a sound record;
- (2) the nature and extent of the petitioner's property, financial, or other interest in the proceeding;
- (3) the possible effect an order may have on the petitioner's interest;
- (4) the availability of other means to protect the petitioner's interest;
- (5) the extent to which other parties in the proceeding will represent the petitioner's interest; and
- (6) the extent to which the proceedings would be inappropriately delayed or broadened by petitioner's participation.

Id. at 616; 10 CFR §§2.714(a) and (b).

Having indicated the general principles which govern our evaluation of the petitions, we now consider in turn the adequacy of the interests set forth in each one. Unless we indicate otherwise, petitioners who have satisfied the standing requirements also have submitted at least one admissible contention and are, therefore, granted intervenor status in this proceeding. Because there are petitioners in this proceeding who have satisfied the requirements for intervention, there will, as we indicated at the Prehearing Conference, be a hearing on the application. Tr. 5.

B. Marvin I. Lewis

The NRC received a petition to intervene from Marvin I. Lewis on September 8, 1981. Mr. Lewis lives in Philadelphia, Pennsylvania approxi-

mately 25-30 miles from the Limerick plant. The Staff believes his petition satisfies the requirements for standing to intervene. The Applicant argues that Mr. Lewis has failed to establish injury in fact.

Mr. Lewis' intervention petition discloses that he resides in Philadelphia, within fifty miles of the Limerick site, and is concerned for his health and safety. His proposed contentions reveal the aspects of the proceedings in which he is interested and how he believes his alleged interest may be affected. The Board finds he has established his interest in the proceeding, and he is admitted as an intervenor.⁷

C. Joseph H. White, III

A timely petition to intervene was received from Joseph H. White, III on September 25, 1981. The Staff believes that Mr. White has standing to intervene. The Applicant opposes intervention by Mr. White, stating that he fails to state a particular injury on which to base standing and to identify the aspects of the proceeding in which he is interested.

Mr. White lives in Bryn Mawr, Pennsylvania, which is approximately 25-30 miles from the plant. He alleges his health and safety will be endangered by the plant's operation. Specifically, he indicates that he is concerned about the quality of his food supply if Limerick operates. These allegations are sufficient to establish his interest in this proceeding. Moreover, his proposed contentions indicate those aspects of the proceeding which concern him. Mr. White has satisfied the requirements for standing in this proceeding and, therefore, is admitted as an intervenor.⁸

D. John Shniper

On September 24, 1981, a petition to intervene was received from John Shniper, an attorney seeking intervention on his own behalf. Subsequently, on October 16, 1981, a Supplemental Petition to Intervene was also received from Mr. Shniper. Mr. Shniper avers that he both lives and works within ten miles of the Limerick site. In his Supplemental Petition, he clearly states that he is concerned about radioactive emissions from the plant affecting his health and that of his children. Although not essential

⁷ Mr. Lewis also alleges that he will suffer economic injury in that his pension fund has invested in the Applicant and operating Limerick will harm the Applicant financially. This type of purely economic injury cannot be the basis for standing in an NRC licensing proceeding. *Houston Lighting and Power Co.* (Allens Creek Nuclear Generating Station, Unit 1), ALAB-582, 11 NRC 239, 242 (1980).

⁸ Mr. White also alleges several other grounds for standing in this proceeding. Since we have found he has standing, we need not consider these alternate bases for standing.

for standing, he further indicates the mechanisms by which he and his family could be exposed to such emissions. This is sufficient to show how he could be injured by operation of the plant and to establish his standing to intervene. Moreover, it is clear from his pleading what aspects of the proceeding concern him. However, as discussed below, none of the proposed contentions filed by Mr. Shniper (Contentions III-2 and V-10) satisfies the requirements for admission in an operating license proceeding. Because Mr. Shniper has failed to propose even one admissible contention, he is denied intervenor status in this proceeding.

E. Air and Water Pollution Patrol/Frank R. Romano

On September 8, 1981, Frank R. Romano filed a Petition For Intervention on behalf of himself, his family, and the Air and Water Pollution Patrol (AWPP) of which he is Chairman. The Staff considered the petition only in terms of a petition for intervention by the organization and concluded that standing had been shown. The Applicant, on the other hand, concluded that the requirements for standing had not been satisfied either for the organization or for Mr. Romano as an individual.

Special requirements must be met in order for an organization to have standing. The organization must show injury either to its organizational interests or to the interests of members who have authorized it to act for them. See *Warth v. Seldin*, 422 U.S. 490, 511 (1976); *Sierra Club v. Morton*, 405 U.S. 727, 739-40 (1972); *Consumers Power Co. (Palisades Nuclear Plant)*, LBP-79-20, 10 NRC 108, 113 (1979). If it is depending upon injury to the interests of its members to establish standing, the organization must provide with its petition identification of at least one member who will be injured, a description of the nature of that injury, and an authorization for the organization to represent that individual in the proceeding. *Houston Lighting and Power Co. (Allens Creek Nuclear Generating Station, Unit 1)*, ALAB-535, 9 NRC 377, 390-96 (1976).

Four affidavits were filed with the Petition for Intervention. Each of the affiants alleges concern about the health and welfare of members of the Air and Water Pollution Patrol and of the affiant's family. The affidavits indicate offices or residence within twenty miles of the plant. (Two of the affidavits simply indicate residence in Norristown. Norristown is approximately fifteen miles from the plant). Each affiant authorizes Mr. Romano as Chairman of the AWPP to represent his or her interests.

There are two potential problems with these affidavits for the purposes of establishing standing. First, there is no indication that the affiants are members of the Air and Water Pollution Patrol. However, the Petition for Intervention, sworn to by the organization's chairman, indicates that the

affiants are, in fact, members. The Petition may be read together with the affidavits to indicate membership. See *Public Service Co.* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-322, 3 NRC 328, 330 (1976). Moreover, Mr. Romano is clearly a member and he, as much as any of the affiants, alleges injury from the plant. See *Duke Power Co.* (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, 151 (1979).

Secondly, these affidavits (and similarly the Petition for Intervention) do not directly allege injury to the affiants. We recognize, however, that the petitioner is not represented by counsel. We are willing, therefore, to overlook some lack of clarity in the pleadings. See *Detroit Edison Co.* (Enrico Fermi Atomic Plant, Unit 2), ALAB-469, 7 NRC 470, 471 (1978); *Public Service Electric and Gas Co.* (Salem Nuclear Generating Station, Units 1 and 2), ALAB-136, 6 AEC 487, 489 (1973). We believe that in alleging injury to their families and to members of the AWPP, Mr. Romano and the affiants intended to include themselves among those being injured. Based on this interpretation of the pleadings, we find that each affiant and Mr. Romano has alleged that he or she will be injured. This will, therefore, establish standing for the AWPP.⁹

Mr. Romano also would have standing in this proceeding. However, he has in no way attempted to differentiate his interests from those of the AWPP. Indeed, if the interests varied there could be a conflict of interests regarding his representation of the AWPP. Therefore, we will treat this as a single consolidated petition for intervention by the AWPP and Mr. Romano. Mr. Romano will be the representative of the consolidated entity, which we will identify as the AWPP. See Tr. 687-88.

F. Keystone Alliance

On September 22, 1981, the NRC received a timely petition from the Keystone Alliance seeking to intervene in this proceeding on its own behalf and on behalf of its members. The petition included a list of the subject areas in which the Keystone Alliance wished to intervene. Subsequently, affidavits were supplied in which members of the Keystone Alliance indicated their interest in the proceedings and authorized the Keystone Alliance to represent them.

⁹ The proposed contentions attached to the Petition for Intervention indicate the aspects of this proceeding which are of interest to this petitioner. In any event, these were superseded by the AWPP contentions included with the coordinated filing of contentions of November 24, 1981.

The Keystone Alliance has demonstrated standing to intervene in this proceeding on behalf of its members. It has shown by affidavit that it has members living within twenty miles of the site who are concerned that operation of the plant will cause injury to their health and safety. These members have authorized the Keystone Alliance to represent them. In addition, the Keystone Alliance has indicated which aspects of the proceeding are of interest to it.¹⁰ The petition states that Mr. Nogee has been authorized to represent the Keystone Alliance in this proceeding.

G. Limerick Ecology Action

Limerick Ecology Action (LEA) filed a Petition to Intervene and Request for a Hearing with the NRC on September 21, 1981. The Staff supports LEA's standing to intervene. The Applicant opposes it.

LEA has provided affidavits from members residing less than twenty miles (and in one case less than two miles) from the site who allege that operation of the facility would cause injury to their health by means of radiological releases and who have authorized LEA to represent them in these proceedings. LEA also provided a list of subject matter areas which it seeks to have litigated. These were later superseded by contentions, many of which we find admissible, as discussed below. We find that LEA has satisfied the criteria for standing and is admitted as an intervenor in this proceeding.

¹⁰ The Staff believes that the Keystone Alliance had demonstrated standing on its own behalf before it submitted any affidavits because its stated purpose relates to the zone of interests protected by the statutes governing this proceeding. For this proposition, the Staff cites *Houston Lighting & Power Co. (Allens Creek Nuclear Generating Station, Unit 1)*, ALAB-535, 9 NRC 377, 392 (1979). We believe the Staff is misinterpreting the *Allens Creek* decision. Even when the purposes of the organization fall within the zone of interests protected, it still must be shown either that any of the group's activities is threatened with injury in fact or that the group has members who are threatened with injury from the grant of an operating license. *Id.* In *Hunt v. Washington State Apple Advertising Comm'n*, 432 U.S. 333 (1977), cited by the Appeal Board in *Allens Creek*, the membership of the group was known without the need for individual member identification because it was a specially defined association of Washington State apple growers, and such growers were threatened with injury. Alternatively, the case could be viewed as involving an injury in fact to the trade association's organizational interest. With respect to an organization like Keystone Alliance with open membership, the Board could not presume that at least one member satisfied the injury in fact prong of the standing test. While specific authorization for an organization with a defined agenda to oppose licensing of local nuclear power plants to represent its members may not be necessary, there is certainly no harm in stating that authorization explicitly at the time members supply affidavits attesting to their threatened injury from the proceeding's outcome.

H. Friends of the Earth in the Delaware Valley/Robert H. Anthony

Robert H. Anthony petitioned to intervene in this proceeding on his own behalf, on behalf of Friends of the Earth in the Delaware Valley (FOE), and on behalf of other individuals who had authorized him to represent their interests.¹¹ For the reasons set forth in our discussion of the AWPP (See page 1438, *supra*), we will treat this as a single consolidated petition and identify it by the designation FOE. We find that FOE has standing to intervene in this proceeding.

Mr. Anthony appears in his own petition to be concerned primarily with economic injury of a type not within the zone of interests of the statutes relevant to this proceeding. However, attached to the petition is the affidavit of Elizabeth Anthony which does allege injury of a type cognizable in this proceeding. Specifically, Ms. Anthony states that operation of the Limerick plant will adversely affect her health and well-being. A supplemental filing by FOE¹² states that Ms. Anthony is a member of the organization. Her affidavit indicates her desire to have FOE represent her interests. In addition, the petition includes a memorandum from the Chairperson of Friends of the Earth in the Delaware Valley authorizing Robert H. Anthony to represent the organization's interests. Finally, attached to the petition are proposed contentions which suffice to indicate the aspects of this proceeding which FOE is interested in litigating, and how FOE believes its interests may be affected. These were superseded by contentions advanced by FOE as part of the combined filing of contentions by all intervenors except ECNP. At least one of FOE's contentions is admitted by us. Thus, all the requirements for standing to intervene have been satisfied.

I. Del-Aware Unlimited, Inc.

Del-Aware has petitioned for intervention both on its own behalf and on behalf of its members. Del-Aware's concern with operation of the Limerick plant is limited to the supplementary cooling water system. Therefore, Del-Aware apparently intends that its participation will be limited to issues related to that system. See 10 CFR §2.714(f).

¹¹ As presented in the petition, the interests of these individuals are identical to those of Mr. Anthony and FOE. Mr. Anthony in protecting his own interests and those of FOE will essentially protect the interests of these individuals. Moreover, if the individuals felt their interests differed from those of Mr. Anthony and FOE, they could have appeared separately.

¹² Response to Memorandum and Order of the Safety and Licensing Board, dated 10/14/81, from Robert H. Anthony for himself and Friends of the Earth in the Delaware Valley (October 25, 1981).

Del-Aware has not alleged any injury to its organizational interests. It must, therefore, rely on injury to its members to establish standing. Affidavits of Colleen Wells and Val Sigstedt, members of Del-Aware, have been submitted to the Board. In addition, Ms. Wells and Mr. Sigstedt both testified before the Board during the prehearing conference for the purpose of establishing the type of injury they would suffer as a result of operation of the Limerick facility. Tr. 27-37. Both affiants live within five miles of the Point Pleasant diversion, which will be used to supply water to cool the Limerick plant. Both state that they regularly use the Delaware River in the vicinity of the diversion for recreation. Mr. Sigstedt uses wells to supply both his home and his business with water. These wells are allegedly three miles down gradient from the Bradshaw Reservoir, a part of the diversion.

Both Ms. Wells and Mr. Sigstedt allege the diversion will have an adverse impact on the esthetics of the area and their enjoyment of it. In addition, Mr. Sigstedt alleges that leakage of toxic materials from the Bradshaw Reservoir will harm his water supply. These alleged injuries are sufficient to establish standing to litigate the particular aspects of this proceeding which Del-Aware indicates are of concern to it.

J. Consumers Education and Protective Association

On September 28, 1981, the NRC received a Petition for Intervention and Request for a Hearing from the Consumers Education and Protective Association (CEPA). The Board requested further information from CEPA in its Memorandum and Order Setting Schedule for Submission of Contentions and Other Preliminary Information (October 14, 1981). On October 28, 1981, CEPA filed four affidavits by members to supplement its petition. Then, on November 17, 1981, CEPA amended its petition and supplied an affidavit by the Executive Director of CEPA indicating that CEPA had appropriate authorization to intervene in this proceeding.¹³

We find that CEPA has established standing to intervene in this proceeding. The affidavits from the four CEPA members indicate that

¹³ The Applicant argues that the two later filings by CEPA were untimely and should be disregarded by the Board. In the Board's October 14 Order requesting further information, the Board indicated that the information should be provided by October 26. As the Staff points out, however, NRC regulations do permit petitions to intervene to be amended without leave of the Board earlier than 15 days before the special prehearing conference. 10 CFR §2.714(a)(3). Therefore we will consider these submissions. As we warned CEPA and the other parties at the prehearing conference held January 6-8, 1982, in the future, filings by any party which are later than the date set for them by the Board will be viewed with extreme disfavor.

each affiant resides in Philadelphia. This is roughly 25 miles from the Limerick facility. Moreover, each affiant alleges that operation of the Limerick plant will affect his or her health and/or safety.¹⁴ Each affiant authorizes CEPA to represent his or her interests in his proceeding. Finally, CEPA has complied with the requirement that it submit a list of the aspects of the proceeding which it is interested in litigating. This list was subsequently superseded by contentions advanced by CEPA.

K. National Lawyers' Guild, Philadelphia Chapter

By a petition docketed September 23, 1981, the Philadelphia Chapter of the National Lawyers' Guild (Guild) seeks to intervene in this proceeding on its own behalf and on behalf of its members. Subsequently, in response to an Order by the Board dated October 14, 1981, the Guild filed a Supplemental Memorandum which clarifies the Guild's concerns and includes affidavits from Guild members and from prisoners who indicate that they authorize the Guild to represent them in this proceeding. The Guild has also filed an affidavit from Susan Arnhold, a member of the Guild's Executive Committee, indicating that the Guild has authorized Mr. Bronstein to represent it in this proceeding as its attorney.

The Guild has standing to raise health and safety concerns of its members. It has submitted affidavits of five Guild members who live within 25 miles of the Limerick plant and who seek to have the Guild represent their interests in this proceeding. Each member alleges that the Limerick plant would threaten his or her health and safety. The Guild has not, however, indicated that it is concerned with health and safety issues (other than concern with the safety of prisoners in the event of an emergency, as will be discussed separately). Rather, the Guild's concerns center on possible violation of its First Amendment rights by surveillance of its members (Contention VII-1).¹⁵

Standing to raise issues concerning alleged violation of First Amendment rights due to security measures taken in connection with a plant is, as far as the Board is aware, a novel question in NRC licensing proceed-

¹⁴ CEPA members also allege injury to their economic interests as ratepayers. This, however, is not an interest within the zone of interests protected by the statutes involved in this proceeding. See *Portland General Electric Co.* (Pebble Springs, Units 1 and 2), CLI-76-27, 4 NRC 610, 614 (1976).

¹⁵ The Guild at one point in its petition indicates that it is raising this issue on behalf of all individuals who oppose the plant. Since the Guild is plainly not authorized to act on behalf of individuals other than its own members as indicated by affidavit, we consider its standing only as it derives from injury to Guild members. See *Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), LBP-77-11, 5 NRC 481, 483-84 (1977).

ings. We recognize that effective arguments can be made both for and against a finding of standing on this issue. The initial question which the Board must address is whether the Guild members are threatened with injury in fact. The Guild alleges that the Applicant will conduct surveillance of Guild members. Clearly improper surveillance could cause injury. Our inquiry does not end there, however. The nature of the injury is important in determining whether the injury is one cognizable in the present proceeding.

To satisfy the requirement of injury in fact, the injury must be caused by the action contemplated. There must be "a 'fairly traceable' causal connection between the claimed injury and the challenged conduct." *Duke Power Co. v. Carolina Environmental Study Group*, 438 U.S. 59, 72 (1978) (citations omitted); See *Village of Arlington Heights v. Metropolitan Housing Development Corp.*, 429 U.S. 252, 261 (1977). In addition, there must be "a 'substantial likelihood' that the relief requested will address the injury shown." *Duke Power Co. v. Carolina Environmental Study Group*, 438 U.S. at 75, n.20. Thus, the injury must be attributable to the proposed action rather than to "the independent action of some third party" *Simon v. Eastern Kentucky Welfare Rights Organization*, 426 U.S. 26, 42 (1976); see *Pacific Legal Foundation v. State Energy Resources Conservation and Development Commission*, 659 F.2d 903, 913-14 (9th Cir. 1981).

The Guild's petition indicates that the Applicant has admitted performing surveillance in the past. Therefore, the Guild argues, we may anticipate that the Applicant will perform such surveillance in the future to protect the security of the Limerick plant. This past surveillance, however, is plainly attributable to the independent actions of the Applicant since the security plan required for an operating license is not yet in effect. Moreover, if surveillance has occurred in the past, it is not apparent that denial of an operating license (the relief sought by the Guild) would terminate the surveillance. Thus, if the threat alleged were simply surveillance by the Applicant, requirements for injury in fact would not be satisfied.

The Board recognizes, however, that, through the licensing process, the NRC could become involved in the alleged surveillance. This would be the case, for example, if the NRC were to require or approve surveillance of those opposed to the Limerick plants as a condition for granting operating licenses. Only if the NRC were involved in causing the injury could a First Amendment violation occur.¹⁶

¹⁶ The Guild concedes this. At the Special Prehearing Conference, the Guild's representative stated, "I think if we could absolutely say that there was no surveillance contemplated on the security plan, then I do not think we would be able to take it any further. . . ." Tr. 636.

The First Amendment addresses only the actions of the government; it does not address itself to private actions which may affect the rights of individuals to associate.¹⁷ Thus, any injuries resulting from the independent past actions of the Applicant could not be violations of First Amendment rights. However, if the Board, relying on its authority under the Atomic Energy Act of 1954, were to order or approve of security plans requiring surveillance which infringed upon the associational rights of the Guild, that would arguably be a violation of the First Amendment. Moreover, the violation of the First Amendment would be directly attributable to the Board's action and could be avoided if no license which required such security measures were issued.

One further requirement remains before the Guild could satisfy the requirement of injury in fact. There must be some reasonable possibility that the injury alleged might actually occur. The Supreme Court has said, "pleadings must be something more than an ingenious exercise in the conceivable." *United States v. Students Challenging Regulatory Agency Procedures*, 412 U.S. 669, 688 (1973). More is required than that the party can imagine circumstances in which he would be affected by the agency's action. *Id.* at 689.

The Guild has, in fact, hypothesized without basis a set of circumstances in which the Board might infringe upon its First Amendment rights. It is sheer speculation to assume that the Board will order or approve a security plan which contains plans for surveillance to be conducted on the Guild because it opposes nuclear power. While it is true that the Atomic Energy Act of 1954, as amended, Section 103(d), 42 U.S.C. §2133(d) (1976), states that no nuclear facility may be licensed if such an action "would be inimical to the common defense and security or to the health and safety of the public," this provision has never been interpreted to require off-site surveillance of opponents of nuclear power. We are not aware of any occasion on which the NRC has ordered such measures. The Guild is unable to direct us to any security plans approved for nuclear facilities which increase surveillance.¹⁸

The provisions of 10 CFR Part 73 govern security measures for nuclear facilities, but they deal with measures taken on the site to address the physical security of the facility and require no surveillance of the type hypothesized here. Indeed, the evidence that NRC would require such

¹⁷ The First Amendment states: "Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the government for redress of grievances." U.S. Const. amend. I.

¹⁸ The Guild points out that it is not able to see other security plans, but it claims surveillance has occurred elsewhere. Tr. 635.

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surveillance is so unconvincing that the Guild finds itself in the awkward position of arguing for an interpretation of the Atomic Energy Act which would require surveillance, and then arguing that NRC is violating the Guild's constitutional rights by acting upon that interpretation. Because this injury is so speculative, the Board holds that the Guild has not shown injury in fact. In reaching such a conclusion, the Board does not seek to indicate that it considers the possibility of surveillance by the Applicant to be entirely speculative, but only that it considers the possibility that such surveillance will be required by the NRC to be completely fanciful.

The other requirement for standing is that the injury alleged be within the zone of interests of the statute involved. Although we have concluded that the injury in fact test has not been satisfied with regard to a violation of First Amendment rights, we nevertheless consider whether such an injury would be within the zone of interests of the Atomic Energy Act. The Act seeks to protect the interests of common defense and security and public health and safety. See 42 U.S.C. §2133(d) (1976). Thus, it is not directly concerned with First Amendment rights. The Constitution, however, is superior to the Atomic Energy Act and that Act, like any other, may not conflict with the Constitution. In order to insure that no constitutional provisions are violated by governmental actions based on a statute, an individual alleging that such actions will cause him an identifiable injury should have standing to challenge the constitutionality of those actions. See *Chicano Police Officer's Association v. Stover*, 526 F.2d 431, 436 (10th Cir. 1975), *vacated and remanded on other grounds*, 426 U.S. 994 (1976), *holding on standing reaffirmed*, 552 F.2d 918 (10th Cir. 1977); 3 K. Davis, *Administrative Law Treatise* §22.08, at 240 (1958). Other agencies have considered constitutional claims when they related to the agency's statutory mandate. See *NAACP v. FPC*, 425 U.S. 662 (1976) (charges of employment discrimination considered to the extent discrimination affects labor costs and thus rates); *Bell & Howell Co. v. NLRB*, 598 F.2d 136, 149 (D.C. Cir. 1979) (serious constitutional question if agency certifying union were to acquiesce in union discrimination), *cert. denied*, 442 U.S. 924 (1979); *Bilingual Bicultural Coalition on Mass Media, Inc. v. FCC*, 595 F.2d 621 (D.C. Cir. 1978) (FCC considers discriminatory employment practices of licensee to the extent they affect licensee character qualification and ability to fulfill obligation to provide programming for minority viewpoints). To the extent a First Amendment claim related

to NRC's actions to provide for the common defense and security, that claim would be within the zone of interests of the statute.¹⁹

In spite of the fact that the zone of interests test is satisfied, we decline to allow discretionary intervention by the Guild on the First Amendment issue. The possibility of the feared injury occurring by the means hypothesized is remote. While it may be true that the Guild has special expertise in the matter in question, the Board does not.²⁰ Finally, there are other forums where the Guild can use its expertise to address questions concerning surveillance which has already occurred and which may occur in the future.²¹

In summary, the Guild has not shown injury in fact and, therefore, lacks standing to participate in this proceeding. Nor do we find that the Guild has satisfied the criteria for discretionary intervention. Therefore, the Guild is not admitted as a party in this proceeding. As discussed below, the Guild may act as counsel for the Graterford Prisoners.

L. Graterford Prisoners

The Guild has also advanced contention VIII-10, alleging that the emergency plan does not provide adequately for evacuation of the State correctional institution at Graterford from the perspective of protection of the safety of the prisoners. The last paragraph of the contention states that it is raised "on behalf of said inmates." Graterford prison is less than ten miles from the Limerick facility, apparently within the "plume exposure pathway" emergency planning zone of potential evacuation to be established under 10 CFR §50.47(c)(2). Accordingly, along the lines we discuss below for other emergency planning contentions, the contention is conditionally admissible. The issue raised by the Applicant and Staff, however, is whether the Guild has standing to litigate the contention.

The Board believes it would be a close question as to whether the Guild has standing to raise the contention. The Guild has established general

¹⁹ Surveillance by the Applicant without NRC approval is not within the zone of interests protected by the statutes involved in this proceeding. There would be no constitutional element to the claim, and neither the Atomic Energy Act nor the National Environmental Policy Act are concerned with protecting associational interests or privacy interests of individuals. The appropriate forum for such a claim would be a court having jurisdiction over a civil action.

²⁰ This would not, of course, deter the Board if it believed that the Guild had raised a significant issue.

²¹ The Guild acknowledges that the Pennsylvania Public Utility Commission is investigating the alleged conduct. Tr. 645. Indeed, the Guild seems concerned that the security plan and the NRC will legitimize activities which the Guild believes might otherwise be reprimanded in other available forums. Tr. 636.

standing based on the sufficiently close residence of its members to the Limerick facility as discussed above. However, this particular contention concerns the interests of the prisoners, who are not Guild members. The interests of the prisoners arguably may be distinguished from the interests of members of the general population, such as Guild members, in an orderly, safe prison evacuation from the perspective of the safety of members of the public. See 10 CFR §2.714(f). Indeed, the excerpt from the last paragraph of the contention quoted above supports the Staff's argument that the Guild should be considered counsel for the prisoners, and not a proper party itself to raise contention VIII-10.

We need not resolve the issue. The Guild would find it acceptable for the prisoners to be admitted as the party and the Guild to be considered their counsel. Tr. 45-48; 667-69. In response to the Board's order of October 14, 1981, the Guild has supplied the affidavits of 17 Graterford prisoners (not due to be discharged within the next three years) affirming that they fear that their safety may be adversely affected in the absence of an emergency evacuation plan which protects them, and that they authorize the Guild to represent them in the proceeding. See Guild filings of five prisoner affidavits on October 26, 1981, and 12 additional affidavits of prisoners filed on December 3, 1981. Accordingly, the 17 identified prisoners are admitted as a consolidated party under the collective group designated as the Graterford Prisoners. The Guild is recognized as their counsel.

M. William A. Lochstet

Dr. Lochstet's petition, received September 22, 1981, states that he resides approximately 120 miles from the plant and sometimes travels within three miles of the plant. He alleges that both at home and while traveling by the plant, he may consume food grown close to the plant which contains unknown quantities of radioactivity and that this endangers his health. He also alleges that the danger that some of the food available near his home will contain radioactivity could depress property values. In addition, he alleges that the amount of radon gas present in the air close to his home will be increased by uranium mining and milling necessary to provide fuel for the plant and that this will endanger his health.

Dr. Lochstet's residence 120 miles from the plant is not sufficient to provide standing. When a petitioner resides more than 75 miles from the plant, this alone will not establish an interest sufficient for standing as a matter of right. *Dairyland Power Cooperative* (LaCrosse Boiling Water Reactor) ALAB-497, 8 NRC 312, 313 (1978). See also *Public Service Co. of Oklahoma* (Black Fox Units 1 and 2), ALAB-397, 5 NRC 1143, 1150 (1977) (not allowed to intervene when residence 125 miles from site). Nor

do Dr. Lochstet's visits to the vicinity of the site suffice to bring this interest to the level necessary for intervention. His petition, as amended, shows only occasional visits close to the site. At best, six occasions are mentioned specifically when he has been within 50 miles of the site, and no time frame for these visits is provided. Intermittent visits to the area do not show an interest sufficient to require granting intervenor status. *Public Service Co. of Oklahoma* (Black Fox Units 1 and 2), *supra*, at 1150; *Union Electric Co.* (Callaway Plant Unit 1), slip. op. at 3 (ASLB, April 21, 1981, unpublished) (special prehearing conference order).²²

In his Supplement to Petition to Intervene (October 22, 1981), and at the prehearing conference (Tr. 68-69), Dr. Lochstet relied on the WASH-740 updated study for the proposition that residence at distances greater than fifty miles should, when coupled with allegations of injury, be sufficient for standing. Dr. Lochstet subsequently filed a copy of the material on which he relies. He believes this establishes that an accident would cause deaths as much as 150 kilometers (90 miles) from the site.

The material filed by Dr. Lochstet is the minutes of a meeting in 1964 of the steering committee on the revision of WASH-740. The Board is not convinced by this that it should extend the distance for standing to over 90 miles. (Even if it did so, Dr. Lochstet's residence, 120 miles from the site, would not be included.) This material predates the cases cited above which indicate that 75 miles is too great a distance for standing based on residence location. It is simply a record of what was discussed at a meeting, not an accepted conclusion of the steering group or the NRC. Moreover, Dr. Lochstet has not shown that the assumptions made in the minutes apply to a commercial reactor such as Limerick. For these reasons, these minutes fail to establish that the distance at which residence raises a presumption of standing should be extended.

Nor do the interests related to contaminated food which Dr. Lochstet alleges provide him with standing. Insofar as his allegations deal with diminished property values because of the fear that produce available

²² Recreation close to the site has been a factor contributing to standing in some cases, but in those instances the individuals have also resided less than fifty miles from the plant. See, e.g., *Philadelphia Electric Co.* (Peach Bottom Atomic Power Station, Units 2 and 3), CLI-73-10, 6 AEC 173, (1973) (affidavit shows grounds for standing when it states members live within five miles of the facility and some members engage in recreation close by it); *Virginia Electric and Power Co.* (North Anna Nuclear Power Station, Units 1 and 2), ALAB-522, 9 NRC 54, 57 (1979) (in case where immediate ruling on intervention was desirable, Appeal Board found it preferable to allow intervention when member group resided 45 miles away, and canoeed close to the plant); *Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-107, 6 AEC 188, 190 (1973) (residence within 30 to 40 miles of the site sufficient to show interest, particularly in light of recreational activities in close proximity to site).

locally will be contaminated, this is not within the zone of interests protected by the statute. Economic injury serves as a basis for standing only if it is environmentally (or radiologically) related. *Portland General Electric Co.* (Pebble Springs Nuclear Plant, Units 1 and 2) CLI-76-27, 4 NRC 610, 614 (1976); *Houston Lighting and Power Co.* (Allens Creek Nuclear Generating Station, Unit 1) ALAB-582, 11 NRC 239, 242 (1980); *Tennessee Valley Authority* (Watts Bar Nuclear Plant, Units 1 and 2) ALAB-413, 5 NRC 1418, 1420-21 (1977). The basis for the interest alleged here is fear of contamination, rather than the effect of radiological food contamination (which we discuss next). If people believe the plant will cause contaminated food, real estate values may drop whether or not any contaminated food actually exists.

As to allegations that the plant will cause radiologically contaminated food which Dr. Lochstet may consume, these allegations are too remote and too generalized to provide a basis for standing to intervene. *See* Tr. 68. There is, for example, nothing contained in the petition to explain why, if there is contaminated food, it would find its way onto Dr. Lochstet's table. While the Board assumes for the purpose of testing for standing that the allegations in the petition are true, it will not take it upon itself to manufacture through sheer speculation a mechanism by which the petitioner might conceivably receive the injury he fears.

Finally, we come to Dr. Lochstet's allegations concerning radon. While radon release as a result of uranium fuel cycle was at one time addressed generically by a Commission regulation, this is no longer the case, and radon issues may be raised before Licensing Boards. *See* 43 Fed. Reg. 15613 (April 14, 1978). This does not mean, however, that anyone has standing to raise questions concerning radon before the Board. Injury in fact is still required. If Dr. Lochstet's residence 120 miles from the plant is insufficient to give him standing, it is inconceivable that he will suffer a sufficient injury from uranium milling and mining operations over a thousand miles away (Tr. 72) to give him standing.

Dr. Lochstet also seeks discretionary intervention. Despite his bare request for discretionary intervention status in his filings prior to the Special Prehearing Conference, the Board was interested in a thorough explanation of whether Dr. Lochstet would have a significant special expertise to contribute on important issues which the Board believed should be explored. Therefore, we pursued this in the context of Dr. Lochstet's proposed contentions and his expertise. *See* Tr. 73-74, 309-35. The pertinent inquiry is not whether the contention would be admissible under section 2.714 if its sponsor had standing, but whether it states a significant issue which should be resolved and whether Dr. Lochstet can contribute significant expertise to that end. We find that the transcript discussion

cited above discloses that such is not the case and therefore discretionary intervention is denied.

Summarizing that transcript briefly, Dr. Lochstet has advanced four contentions on three subjects:

- I-47 and I-48: Number of HPCI pumps
- V-8: Radon emissions in the fuel cycle
- V-9: Iodine-129 emissions in the fuel cycle

Dr. Lochstet has a doctorate in physics and has been an assistant professor of physics at Pennsylvania State University since 1966. He has also been an informed observer and participant in NRC proceedings. He has filed comments on many NEPA environmental impact statements regarding uranium fuel cycle activities and nuclear power plants. He also has several published articles, although none of which, from the titles, appear to concern the subjects of his proposed contentions. *See* filings of Dr. Lochstet in this proceeding of September 18, 1981 and January 14, 1982.

Our denial of Dr. Lochstet's request for discretionary intervention does not denigrate his general qualifications as a physicist and informed observer of nuclear regulatory matters. However, in the context of the issues he seeks to raise, he disclosed nothing which would contribute significantly or portend an important future contribution to the operating license decision before us. For example, his desire (Contentions I-47 and 48) that there be three High Pressure Coolant Injection (HPCI) pumps for each unit, rather than the proposed one, arranged so that each pump would inject coolant into a separate core spray loop, was based on a very superficial approach to a complex analysis. *See* Tr. 312-313, 316.

Briefly, based on the FSAR (Section 6.3.1.1.2), the HPCI system is one of the high pressure coolant systems that are part of the Limerick design. The system is comprised of a single steam turbine-driven, constant flow pump assembly and associated piping, valves, controls and instrumentation. Water is injected into the reactor pressure vessel by way of one of the two core spray loop pipes. The purpose of the HPCI system is to maintain reactor pressure vessel water inventory following a small pipe break or a transient which does not depressurize the reactor vessel. If this system fails, high pressure coolant can be supplied from the reactor core isolation cooling system, the control rod drive system and the condensate and feedwater systems. As in other G.E. boiling water reactors (BWRs), the high pressure systems are supplemented by the automatic depressurization system (safety/relief valves) which lowers the pressure in the reactor vessel, and the low pressure coolant injection system (four pumps) and the core spray system (four pumps), which supply makeup water to the reactor vessel.

Dr. Lochstet does not contend that the HPCI system design does not meet the Commission's regulations, but asserts that this design is not adequate because of the high population density at Limerick. Tr. 309-310. He admitted that he had done no analysis of the BWR emergency core cooling systems (ECCS) including the HPCI system (Tr. 313), saying, "You can do that calculation in your head." Further, in response to the Board question, "How did you arrive at the number three?", he replied, "To be very honest with you, I thought two [HPCI pumps] would do the job but I thought I would shoot for three just to make sure I would get there." Tr. 316.

Dr. Lochstet generally displayed a lack of knowledge of the design and performance analysis of the Limerick ECCS, including the HPCI system. Tr. 309-18. Both Applicant (Tr. 320) and Staff (Tr. 321) concluded that Dr. Lochstet had demonstrated that his participation in this proceeding would not contribute to the record of this proceeding.

Dr. Lochstet filed additional material to support his proposed contentions on January 14, 1982. This included a copy of the Advisory Committee on Reactor Safeguards (ACRS) Report to the Chairman of the Atomic Energy Commission on Newbold Island Nuclear Generating Station Unit Nos. 1 and 2, August 10, 1971. The ACRS letter conditionally approved construction of the Newbold Island Station, and included additional comments of three of the fifteen members. One comment was that for a high power reactor at a site as densely populated as Newbold Island, the applicant should give further consideration to the use of an HPCI system on the second core spray loop. Mere citation of these comments adds nothing to Dr. Lochstet's expertise.

In Contention V-8, Dr. Lochstet alleges that radon emissions as a result of the nuclear fuel cycle have not been properly evaluated. The Board noted at the prehearing conference that this issue is presently before the Appeal Board. Tr. 323. The Appeal Board has already reached a generic decision on the quantity of radon emissions attributable to the fuel cycle of any reactor. It is presently determining, generically, the health effects of such emissions. Dr. Lochstet apparently concedes that the decision by the Appeal Board would be applicable to Limerick. Tr. 325²³

Since the Appeal Board decision would be technically applicable to Limerick, with limited flexibility to show why it should be followed, the significance of the radon issue for Limerick is lessened. The Board is not convinced that the issue is crucially important, and to the extent it is important, it may be developed by ECNP which also addressed it in a

²³ The manner in which this Board would apply that decision on Limerick is discussed at page 1454, *infra*.

contention. Dr. Lochstet has not shown us that he brings particular expertise to the question. Therefore, the Board will not permit him discretionary intervention on this matter.

Dr. Lochstet's point in raising contention V-9 is a curious one, of no apparent import to a decision in this case. As explained in the record (Tr. 329-37), Dr. Lochstet agrees that the emissions attributed to I-129 in Table S-3 to 10 CFR §51.20(e) (1.3 curies) is correct. Tr. 330-31. However, he wants the particular health effects of the 1.3 curies separately discussed while eschewing any argument that health effects from the much larger total releases in Table S-3 should be factored into the NEPA cost/benefit analysis. The Board sees no purpose in this academic separation of the effects of the 1.3 curies attributed to I-129, and Dr. Lochstet has supplied none. For this reason, without deciding whether such a contention would be admissible if Dr. Lochstet had standing as of right, it is not an important issue so as to justify a grant of discretionary intervention to consider it. This would be true even if Dr. Lochstet has expertise, which he has not disclosed, on health effects of radiation.

N. Environmental Coalition on Nuclear Power

The Environmental Coalition on Nuclear Power (ECNP) filed a petition for leave to intervene in this proceeding on September 25, 1982. On October 14, 1981, the Board ordered ECNP to file affidavits authorizing the organization to intervene and authorizing the representative filing the petition to act on behalf of the organization. ECNP supplied the required affidavits in two subsequent filings.

The affidavits supplied by ECNP indicate that it has members residing less than 50 miles from the Limerick site (one affidavit is from a member who resides four miles from the site) who fear injury to their health and safety due to the release of fission products from the plant. These members have authorized ECNP to represent their interests in this proceeding. In addition, Dr. Judith Johnsrud, Co-Director of ECNP, by affidavit states that ECNP has authorized Dr. Chauncey Kepford and herself to represent the organization in this proceeding. ECNP has also indicated the aspects of this proceeding in which it desires to participate. Its subsequent filing of two contentions has clarified somewhat the scope of these aspects. Therefore, ECNP has standing to participate in this proceeding.

The requirement that ECNP has filed an admissible contention must be satisfied. ECNP was not identified as a sponsor of any of the contentions in the coordinated filing of all of the other intervenors. Instead, on the same day the coordinated filing was received, the Board received from ECNP its own supplemental petition to intervene. This filing contained two

contentions and indicated that ECNP wished to adopt all the contentions in the consolidated filing, approximately 150 contentions.

In seeking to adopt all the contentions, ECNP has not complied with the Board's request for either a coordinated filing or at least separately stated contentions of its own (beyond the two filed) by ECNP. ECNP wishes the Board to believe that it coordinated with the other petitioners in preparing contentions. The evidence of such coordination is minimal. While counsel for the petitioner who coordinated the filing of contentions knew the subject areas which interested ECNP, she did not know what contentions ECNP would file. Tr. 124. Nor did ECNP aid in formulating the wording of the coordinated contentions, or, indeed, know what the wording was at the time the contentions were filed. Tr. 111, 124-25.

ECNP was not sufficiently familiar with the content of the coordinated filing to know that the two contentions it filed separately were, in essence, advanced in the coordinated filing by other petitioners. Tr. 110. Nor, in spite of its stated desire to adopt all the contentions, is ECNP interested in litigating all of them. Tr. 112. For example, ECNP's representative stated that ECNP would not be interested in pursuing independently contentions I-47 and I-48 concerning the HPCI system. Tr. 319.

At the prehearing conference, the Board indicated that ECNP had not coordinated in the manner of the other petitioners. ECNP had not supplied a basis for each contention or indicated how each contention relates to its interest in the proceeding. Therefore, the Board discussed using its discretion to allow ECNP to participate as a consolidated intervenor on all the admitted contentions. Tr. 115-23. ECNP would not have been a named party on the contention. The burden of getting information, suggestions and discovery requests to the named intervenors would have been entirely upon ECNP. The named intervenor could have chosen whether or not to use the material it was given by ECNP.

Upon reflection, the Board has concluded that it will not adopt this concept of consolidation because it does not believe such consolidation would serve a useful purpose. Any contentions for which ECNP would be a consolidated intervenor would already have been admitted in this proceeding. (Only Dr. Lochstet's contentions are precluded because their sponsor lacks standing. ECNP stated it was not interested in the HPCI and Iodine-129 contentions and has submitted its own contention which essentially duplicates Dr. Lochstet's radon contention.) Although not a consolidated intervenor on the admitted contentions, ECNP is free to offer assistance to contention sponsors. However, since ECNP is not a consolidated intervenor, there will not be the burden on contention sponsors which they might otherwise feel from their relationship with ECNP. *See, e.g.*, Tr. 121-22.

The only advantage that might accrue to ECNP from making ECNP a subservient consolidated intervenor in the manner contemplated at the prehearing conference would be that, in the event the named party for some reason was unable to pursue a contention, ECNP could be designated lead intervenor for it. ECNP notes that Boards do not always permit other intervenors to adopt such contentions. Assuming *arguendo* that ECNP's point in that regard is correct, the Board will not adopt the technique of consolidated intervention for the purpose of avoiding future procedures which might properly lead to contentions being eliminated.

On the other hand, the Board has substantial discretion to control the proceeding. If it appears in the future that a contention will be dropped, the Board may permit an intervenor with related contentions to adopt it. Moreover, the Board has authority to pursue independently issues which it finds particularly important. See 10 CFR §2.760a.

For these reasons, the Board concludes that ECNP may not participate on any of the contentions filed by the coordinated intervenors. ECNP will be an intervenor only if we find at least one of its own contentions admissible.

Radon

ECNP's first contention is that there is no accepted assessment of the total health effects resulting from radon gas emitted as a result of mining and milling uranium fuel for Limerick. In its contention, ECNP recognizes that there is a proceeding before the Appeal Board which is to determine the health effects associated with the releases of radon. We will admit a contention concerning the health effects of radon emissions only if provided the "documented opinion of one or more *qualified* authorities. . . that the incremental [health effects of] fuel cycle-related radon emissions" will be greater than those determined in the Appeal Board proceeding. See *Philadelphia Electric Co.* (Peach Bottom Atomic Power Station, Units 2 and 3), ALAB-654, 14 NRC 632, 635 (1981). For this reason, we will defer ruling on ECNP's radon contention until after the Appeal Board decision in the *Peach Bottom* case is issued.

The Staff should assure that ECNP and the Applicant receive copies of the *Peach Bottom* decision promptly after it is issued. ECNP will then have 30 days after the service of that decision to supply the necessary documentation to question the findings therein. The Staff and Applicant will be allowed to reply to any filings made by ECNP. We caution ECNP that even if it can supply the documented opinion required, we will have to consider whether *collateral estoppel* will prevent ECNP from challenging the *Peach Bottom* decision in light of ECNP's participation in that consolidated proceeding.

Waste Confidence

The only additional contention advanced by ECNP contends that an operating license should not be issued unless and until there is assurance of adequate and safe storage and disposal of spent fuel and high-level radioactive wastes which will be created by the Limerick nuclear power plant. Contention V-7 advanced by CEPA is in essence the same contention, although it is directed only to the disposal of spent fuel. These contentions are denied. It is correct that consistent with the decision in *Minnesota v. NRC*, 602 F.2d 412 (D.C. Cir. 1979) the Commission has instituted a generic rulemaking proceeding, which is still pending, to reassess its confidence that radioactive wastes produced by nuclear facilities will be safely stored and then can be safely disposed of. 44 Fed. Reg. 61372 (October 25, 1979). That notice by the Commission interprets the *Minnesota* case as not requiring the altering of individual licensing practices while the Commission reassesses its confidence. Accordingly, the Commission, in its notice, explicitly directs ". . . that during this [waste confidence rulemaking] proceeding the issues being considered in the rulemaking should not be addressed in individual licensing proceedings."²⁴

The Board has reviewed the decision in *Pacific Legal Foundation v. State Energy Resources Conservation and Development Commission*, 659 F.2d 903 (9th Cir. 1981), which ECNP asserts supports admission of its waste confidence contention. The decision does not undercut either the basis for the Commission's determination not to halt licensing pending the completion of the waste confidence rulemaking or the Commission's right to make that determination. The Court there decided merely that *California* has the right, in the face of claims of Federal preemption, to require by statute, *inter alia*, a finding by *its state* energy commission that a federally approved method of disposing of nuclear waste exists as a prerequisite to *California* approval of nuclear power plants.

²⁴ Earlier, in 1977, the Commission denied a petition for a rulemaking filed by the Natural Resources Defense Council which sought to halt licensing on the same grounds advanced in this contention. 45 Fed. Reg. 34391 (July 5, 1977), *aff'd* *Natural Resources Defense Council v. NRC*, 582 F.2d 166 (2d. Cir. 1978). This Commission action is relied upon by the Staff before us and by a recent Appeal Board decision. *Florida Power and Light Co.* (Turkey Point, Units 3 and 4), ALAB-660, 14 NRC 987, 1011, n.38 (November 30, 1981). The Commission's 1977 action, and the 1978 *NRDC* decision, *supra*, potentially could have been modified by subsequent events, including the *Minnesota* decision, *supra*, and the Commission's 1979 initiation of the waste confidence proceeding. As it happens, however, the Commission chose to reaffirm in its 1979 notice that individual licensing proceedings should not address the issue of waste confidence.

O. Interested Government Agencies

Three petitions were received seeking participation pursuant to 10 CFR §2.715(c). The Commonwealth of Pennsylvania, the Consumer Advocate of the Commonwealth of Pennsylvania,²⁵ and the City of Philadelphia may all participate as interested governmental representatives. Although they were not required to submit contentions as a precondition to participation, they may raise issues which particularly concern them. They need not take a position on such issues. They must raise these issues with enough specificity and detail that they permit evidentiary determinations to be made in an adjudicatory setting. The Board and the parties must receive notice of these issues sufficiently in advance of the hearing that reasonable preparation is possible. *See Gulf States Utilities Co. (River Bend Station, Units 1 and 2)*, ALAB-444, 6 NRC 760, 768-72 (1977). Similarly, timely notice is necessary if an interested governmental representative wishes to present direct testimony on an issue raised by another party.

III. CONTENTIONS CONCERNING THE SUPPLEMENTARY COOLING WATER SYSTEM

A. Background

Several proposed contentions relate to the supplemental cooling water system for Limerick. This system is necessary because, although cooling water is to be taken from the Schuylkill River and/or the Perkiomen Creek, there will be times when these sources will not have sufficient water to cool Limerick and meet downstream needs. *See Philadelphia Electric Co. (Limerick Generating Station, Units 1 and 2)*, LBP-74-44, 7 AEC 1098, 1115, 1117 (1974). Initially, the plant was proposed with supplementary cooling water to be supplied from the Delaware River as augmented by controlled releases from the then-proposed Tocks Island Reservoir.²⁶ Be-

²⁵ At the Special Prehearing Conference, the Board was assured that the Commonwealth of Pennsylvania and the Consumer Advocate represent different interests (Tr. 52-54), therefore they will both be allowed to participate. The Board expects, however, that their participation will not be repetitive. The Board notes that the issues which appeared to be of the greatest interest to the Consumer Advocate, financial qualifications and need for power, have since been removed from the scope of this hearing. The Consumer Advocate is, of course, free to participate on other issues of concern to it.

²⁶ Use of the Tocks Island Reservoir would involve channeling water from the Delaware River to the plant via the Perkiomen Creek by means of a diversion to be constructed at Point Pleasant. The Point Pleasant diversion of Delaware River water to the Perkiomen would be utilized under all the alternatives considered.

cause there was uncertainty about the future of the Tocks Island project, the AEC Staff recommended that the Applicant be required to get a firm commitment for an alternative water supply should Tocks Island not be available. See 7 AEC at 1119.²⁷ The Applicant asked the Delaware River Basin Commission (DRBC), which allocates the use of water from sources in the Delaware River Basin, for such a commitment. See 7 AEC at 1114. The DRBC indicated on March 15, 1973 that, by January 1, 1977, it would decide whether there were adequate existing water storage facilities to supply all water needs, including those of the Applicant. If water storage were found not to be adequate, the Applicant was to build a storage reservoir sufficient for its needs. See 7 AEC at 1120. This possible reservoir was treated in the AEC Staff's Final Environmental Statement (FES) through an evaluation of a range of impacts which would typically be associated with such a reservoir although the particular location, design, and costs of the reservoir had not been specified. In addition, the Staff and Applicant presented analyses of a "river follower" mode of operation whereby there would be no storage of supplemental cooling water and the power levels at the Limerick plant would rise and fall with changes in the allowable quantities of water available from the Schuylkill and Delaware Rivers. See 7 AEC at 1127-28.

In the construction permit proceeding, the Licensing Board found that the river follower mode of cooling would completely change the proposal for the Limerick plant and that this method of cooling had not been adequately evaluated. See 7 AEC at 1128. It therefore dismissed this alternative as a basis for issuance of a construction permit. The Licensing Board also found that the consideration given to environmental effects of a supplemental reservoir was inadequate because it did not discuss a specific reservoir. 7 AEC at 1123. The Board authorized the issuance of a construction permit, but directed that, if and when the DRBC permitted the Applicant to construct a supplemental reservoir, the AEC Staff was to prepare an impact statement. The statement would be prepared prior to construction of the reservoir and would discuss the impacts of its construction and operation. 7 AEC at 1147.

The Appeal Board agreed with the Licensing Board that the generic consideration of impacts from reservoirs was an insufficient basis for granting a construction permit to Limerick. See *Philadelphia Electric Company* (Limerick Generating Station, Units 1 and 2), ALAB-262, 1 NRC 163, 197-8 (1975). However, the Appeal Board removed the permit

²⁷ Pursuant to the Energy Reorganization Act of 1974 and an implementing Executive Order, the licensing and regulatory functions of the Atomic Energy Commission were transferred to the Nuclear Regulatory Commission on January 19, 1975.

condition requiring the NRC to prepare an environmental impact statement (EIS) on the supplemental reservoir if one were to be built. Unlike the Licensing Board, the Appeal Board found that the radiological and environmental consequences of operation in the "river follower" mode were adequately considered. See 1 NRC at 192-95. Concluding that the NEPA balance would be no less favorable to Limerick if the Tocks Island reservoir or supplemental reservoir option were adopted than it would be if the plant were operated in a river follower mode, the Appeal Board authorized issuance of the construction permit on the basis of the environmental analysis performed on the river follower option. 1 NRC at 205.²⁸ In reaching its conclusions, the Appeal Board found that the AEC Staff had acted appropriately in relying for part of its own assessment on and EIS prepared by the DRBC. See 1 NRC at 189.

The Appeal Board noted that authorization of the construction permit on the basis of the "river follower" alternative would not foreclose eventual use of the other alternatives if available and found preferable. 1 NRC at 200 n.56. A decision concerning the alternative of a supplemental reservoir, however, was specifically left for the DRBC. NRC would review that decision only to the extent it created collateral safety issues. 1 NRC at 206. The proposal presently before us still envisions the plant operating in a river follower mode similar to that upon which the Appeal Board based its approval of the construction permit.

B. Effect of NRC Decision at the Construction Permit Stage

Both the NRC Staff and the Applicant argue that because many of these supplemental cooling water matters were considered by the Licensing Board and the Appeal Board at the construction permit stage, they need not be reconsidered now.²⁹ At the prehearing conference, counsel for Del-Aware conceded that water issues were before the Board at the construction permit stage but argued that, in light of events since that time, relitigation of these issues is appropriate. Tr. 348-49.

Not all environmental issues need be reconsidered at the operating license stage. The Commission's regulations provide that the Environmental Report submitted by the Applicant with its application for an operating

²⁸ The Commission subsequently endorsed this approach, calling it "issuance of a permit on the basis of a 'worst case'" analysis. See *Public Service Company* (Seabrook Station, Units 1 and 2), CLI-77-8, 5 NRC 503, 545, n.52 (1977).

²⁹ The Staff and Applicant agree that in the event Del-Aware can show sufficiently changed circumstances from the time the construction permit was issued, the changed matters could be appropriately considered now.

license will include the same matters discussed in the Environmental Report for a construction permit "but only to the extent that they differ from those discussed or reflect new information in addition to that discussed in the final environmental impact statement prepared by the Commission in connection with the construction permit." 10 CFR §51.21.³⁰ In turn, the scope of the Staff's Draft and Final Environmental Statements (DES and FES) at the operating license stage is defined by matters which Section 51.21 mandates for the Applicant's Environmental Report. See 10 CFR §§51.23 and 51.26. The District of Columbia Circuit approved of this approach in *Calvert Cliff's Coordinating Committee, Inc. v. AEC*, 449 F.2d 1109 (D.C. Cir. 1971), saying full consideration under the National Environmental Policy Act (NEPA), 42 U.S.C. §§4332 *et. seq.*, "need not be duplicated, absent new information or new developments, at the operating license stage." *Id.* at 1128, quoted in *Union of Concerned Scientists v. AEC*, 499 F.2d 1069, 1079 (D.C. Cir. 1974). Thus, it is clear that NEPA does not mandate that environmental issues considered in the construction permit proceedings be considered again in the operating license hearing, absent new information.

Even were NEPA interpreted to require an environmental review at the operating stage of all matters considered when the construction permit issued, the principle of *collateral estoppel* might apply to issues litigated in the earlier proceeding. *Collateral estoppel* provides that an issue which has actually and necessarily been determined by a court of competent jurisdiction may not be relitigated in a subsequent case based on a different cause of action involving a party to the prior litigation. *Montana v. United States*, 440 U.S. 147, 153 (1979). *Collateral estoppel* applies to administrative as well as judicial proceedings and, therefore, may apply to issues before a licensing board. See *Alabama Power Co.* (Joseph M. Farley Nuclear Plant, Units 1 and 2), CLI-74-12, 7 AEC 203 (1974). In *Farley*, the Commission noted with approval the Appeal Board's conclusion that this doctrine shall be "applied with a sensitive regard for . . . changed circumstances or . . . special public interest factors in the particular case . . ." *Id.* at 203.

Traditionally, *collateral estoppel* has applied only if four elements are present. These are that (1) the issue for which preclusion is sought is the

³⁰ In the construction permit proceeding for Limerick there was supplemental testimony supplied by the Staff and relied upon by the Appeal Board for its environmental findings. This is treated as having amended the FES. See 10 CFR §51.52(b)(3); *cf.*, *Citizens for Safe Power v. NRC*, 524 F.2d 1291, 1294 & n.5 (D.C. Cir. 1975) (approving Appeal Board holding that FES should be deemed modified to correspond to stipulation by parties); *Ecology Action v. AEC*, 492 F.2d 998, 1001 (2d Cir. 1974) (deficiency in FES not automatic grounds for reversal when missing matter may be considered in agency hearing).

same as was involved in the prior action; (2) the issue was actually litigated; (3) the issue was determined by a valid final judgment; and (4) determination of the issue was essential to the prior judgment. *Houston Lighting and Power Co.* (South Texas Project, Units 1 and 2), LBP-79-27, 10 NRC 563, 566 (1979), *aff'd*, ALAB-575, 11 NRC 14 (1980). These elements are arguably present for some of the issues contained in petitions for intervention presently before the Board.

It has also traditionally been required that the party in the second litigation who is to be bound by the judgment of the prior litigation was a party or a privy to a party in the earlier litigation. *See, e.g., id.* at 572. This has assured that a "full and fair" opportunity to litigate the issue has been provided the party at some point and has avoided the possibility that a party will be denied due process of law. *See Allen v. McCurry*, 449 U.S. 90, 95, (1980); *Parklane Hosiery Co. v. Shore*, 439 U.S. 322, 327 n.7 (1979). Del-Aware was not a party to the construction permit proceedings, but one licensing board has recently held it is not necessary for the party being estopped to have participated in the earlier litigation, at least in the special circumstances of an NRC operating licensing proceeding. *See Cleveland Electric Illuminating Co.*, (Perry Nuclear Power Plant, Units 1 and 2), LBP-81-24, 14 NRC 175, 200 (1981); *cf. Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), LBP-82-3, 15 NRC 61, 77-82 (1982) (matter which could have been an issue in construction permit proceeding foreclosed at operating license stage although intervenor seeing to raise it was not a participant in construction permit proceeding). The *Perry* board observed that nuclear licensing proceedings are "notorious", 14 NRC at 199, and that other intervenors as well as the NRC Staff represent the public interest in such proceedings. *Id.* at 200. The *Perry* board held that in light of the Applicant's reliance on the construction permit decision and the function of *collateral estoppel* in preventing needless relitigation, *collateral estoppel* could equitably be applied to issues litigated at the construction permit stage. *Id.* at 199-200.³¹

Under the *Perry* approach, *collateral estoppel* could apply to Del-Aware on matters litigated in the construction permit proceeding although Del-Aware was not a participant in that proceeding. However, the Appeal Board preliminarily has disagreed with this approach in the course of ruling on a request to stay the *San Onofre* decision, *supra. Southern Cal. Edison* (San Onofre, Units 2 and 3), ALAB-673, 15 NRC 688 (1982).

³¹ The Supreme Court has recognized that the policies underlying *collateral estoppel* may apply in contexts not recognized by the common law. *See Allen v. McCurry*, 449 U.S. at 94, 66 L. Ed. 2d at 313.

Because we find that the scope of review required by NEPA at the operating license stage does not require reevaluation of environmental matters considered before the construction permit was issued in the absence of sufficiently changed circumstances, we need not decide whether, as an independent doctrine of repose, the *Perry* approach to *collateral estoppel* should apply here.

In support of its position that the issues set forth in its petition for intervention should be litigated, Del-Aware alleges that several changes have occurred since the construction permit was issued which justify our reconsideration of environmental impacts of the cooling water system in this operating license proceeding. Some of these changes are sufficiently significant that their consideration is warranted. For example, short-nosed sturgeon, an endangered species, have reportedly been found in the Delaware River after the conclusion of the construction permit proceeding. Similarly, since that time the proposed location for the Point Pleasant intake structure in the Delaware River purportedly has been changed and its location allegedly may be changed again. These two changes since the conclusion of the construction permit proceedings, particularly when considered together, create the possibility of sufficiently different impacts on the Delaware River to justify their analysis in the operating license environmental impact statements and our further consideration of the admissibility of contentions relating to their changed impacts.

Several other changes also are alleged by Del-Aware. In general, we will discuss their significance when we discuss the contention to which they relate. A few, however, deserve mention now.

We note that the National Historic Preservation Act, 16 U.S.C. §§470-470(b) and 470(c)-470(n) (1976 and supp.), and the Endangered Species Act, 16 U.S.C. §§1531-1543 (1976 and supp.), have been amended since the construction permit was issued. Compliance with these acts will be required. However, reconsideration of environmental impacts under NEPA is not necessitated by changes in these laws unless it appears that the changes in the laws in some way relate to changing environmental impacts. If the environmental costs remain the same, the amendments to these laws do not require that the matter be opened for reconsideration. But where there are significant changes in environmental impacts, the impacts must be evaluated in light of current statutory authority. Thus, for example, if it is shown that short-nosed sturgeon exist in the Delaware River, this must be factored into the NEPA analysis and the sturgeon's status as an endangered species will be governed by the current Endangered Species Act.

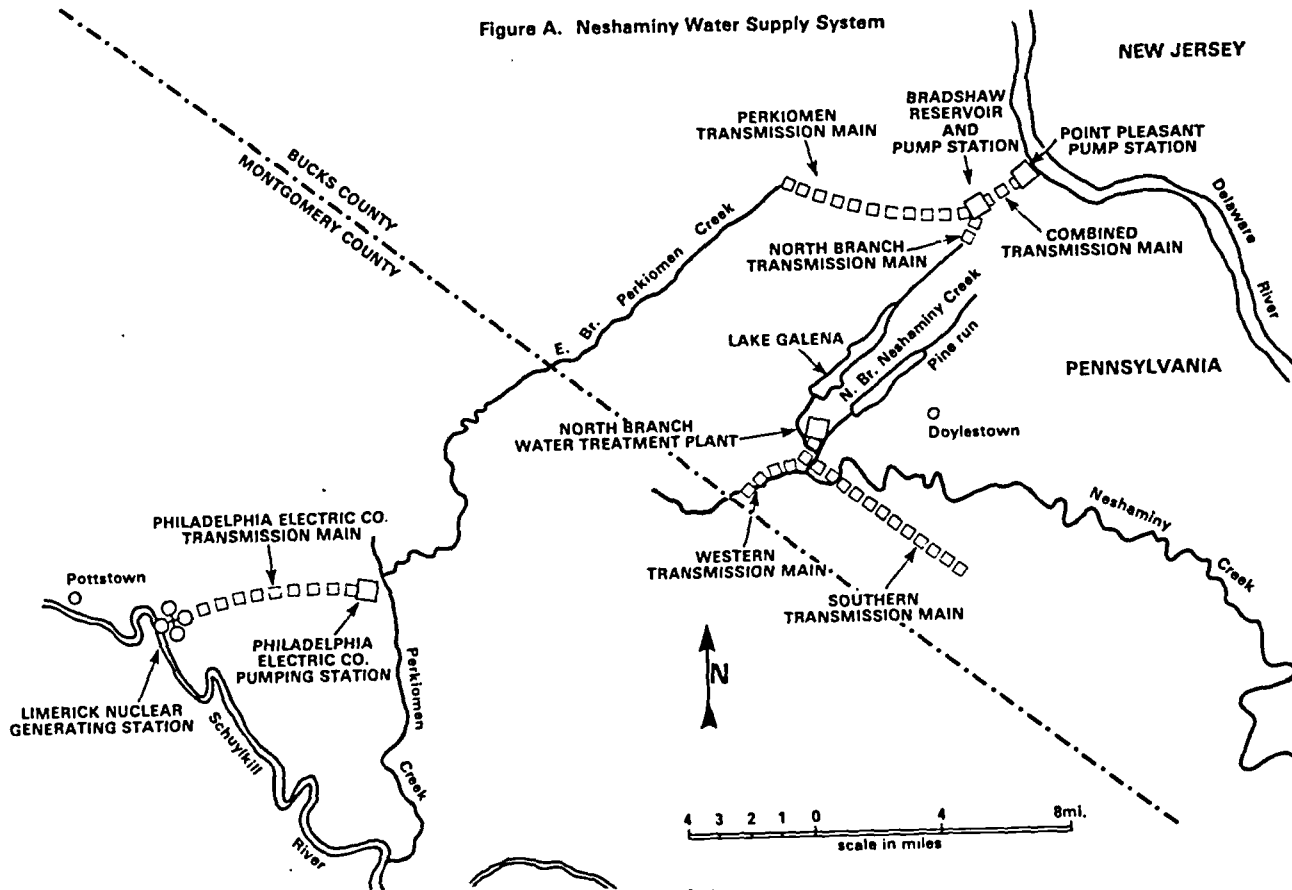
Although the proposal presently before us relies on the "river follower" mode of supplementary cooling, as did the design on which the Appeal

Board's approval of the construction permit was based, we must be cautious in determining to what extent the "river follower" proposal was actually evaluated in those prior proceedings. The "river follower" mode as presently constituted involves a pumping station on the Delaware River at Point Pleasant. (See Figure A on p. 1463.) Water from the Delaware will flow through a transmission main to the Bradshaw Reservoir and pumping station. From the Bradshaw Reservoir, water will flow through another transmission main to the East Branch of the Perkiomen Creek. It will flow down the Perkiomen until it reaches a point close to the Limerick plant where there will be another pumping station and a final transmission main through which water will flow to the plant. Part of this system will also be utilized to provide water to the Neshaminy Water Resources Authority (NWRA). Thus, some of the water passing through the Point Pleasant pumping station and transmission main to the Bradshaw Reservoir will be carried by yet another transmission main to the North Branch of the Neshaminy Creek from whence it will flow to the North Branch Water Treatment (Chalfont) Plant to be used to supply supplemental water to central Bucks and Montgomery Counties.

The details of the "river follower" plan approved at the construction permit stage are ambiguous. It appears to the Board, however, that the "river follower" plan, as then conceived, included making use of the Point Pleasant intake and the Bradshaw Reservoir to divert water into the Perkiomen Creek. *See, e.g.*, Staff Testimony of A. R. Lyle, following Tr. 5847 (March 5, 1974); Tr. 3656-57 (Dec. 5, 1973). The extent to which details of the project were known or considered is unclear. Some consideration of the environmental impacts of the project was undertaken by the Appeal Board, however. *See* 1 NRC at 202.

Although the FES did not specifically address the river follower option (1 NRC at 189), the Appeal Board found that its discussion of environmental costs was adequate. 1 NRC at 202. It appears that the basis for finding that the environmental costs set forth in the FES would apply equally well if the plant operated in the river follower mode was largely that no intervenor raised the issue of possibly differing environmental costs attributable to that method of supplemental cooling. The Appeal Board did not on its own see any greater environmental costs attributable to the river follower method of cooling. *See* 1 NRC at 190, 202-3. Therefore, the Appeal Board found that there were no environmental costs unique to the river follower method of supplementary cooling. However, environmental costs ascertainable only as the plan gained greater concreteness after the construction permit was issued have not been considered by the NRC. It is appropriate that they be considered now, because the plan is now more definite and measures to mitigate impacts may be more apparent. How-

Figure A. Neshaminy Water Supply System



SOURCE: Neshaminy Water Resources Authority (Neshaminy Watershed Plan Water Supply Bucks and Montgomery Counties, Pennsylvania) DRBC No. D 79 52CP (Feb. 18, 1987)

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ever, absent a determination of significantly increased environmental impacts, we will not consider issues concerning the overall acceptability of the river follower method of cooling. This does not mean we are precluded from considering adjustments to the design used for this method of cooling. For example, we may consider the impacts of a change in intake location, but not the fundamental alternative of dry cooling towers.

C. Effect of Consideration by Other Agencies

In addition to considering the extent to which these issues were evaluated at the construction permit stage, we must also consider the effect that should be given to determinations by other agencies concerning these matters. While an agency must be cautious in claiming that another agency has addressed and conclusively determined an issue, *see Federal Trade Commission v. Texaco*, 555 F.2d 862, 881 (D.C. Cir. 1977), *cert. denied*, 431 U.S. 974 (1977), for NEPA purposes some degree of reliance has been upheld. The Council on Environmental Quality, with responsibility for overseeing implementation of NEPA, has issued regulations calling for lead agencies when more than one federal agency is involved in a project. 40 CFR 1502.5-.6 (1981); *see also, Silentman v. Federal Power Commission*, 566 F.2d 237, 240 (D.C. Cir. 1977). *But cf., Jones v. District of Columbia Redevelopment Land Agency*, 499 F.2d 502, 510 (D.C. Cir. 1974), *cert. denied*, 424 U.S. 937 (1975) (requiring each of three agencies considering a project *seriatim* to prepare an EIS, but not addressing the extent to which one agency could depend on the EIS of another).

The question is the extent to which one agency may rely on an EIS prepared by another agency. The rule of reason which applies to NEPA in other circumstances should also apply here. *See Natural Resources Defense Council v. Morton*, 458 F.2d 827, 834, 837 (D.C. Cir. 1972). Thus, needless redundancy should be avoided. In *Natural Resources Defense Council v. Callaway*, 524 F.2d 79 (2d Cir. 1975), for example, the court said that while a federal agency could not abdicate its responsibility by allowing a non-federal entity seeking a permit to prepare the EIS, the situation was different when a second federal agency was involved. Because federal participation was assured, the agencies could decide for themselves which would be the lead agency and would prepare the EIS. *Id.* at 86; *see also, Sierra Club v. Morton*, 400 F. Supp. 610, 645 n.60 (N.D. Ca. 1975), *modified on other grounds sub nom Sierra Club v. Andrus*, 610 F.2d 581 (9th Cir. 1980), *rev'd on other grounds sub nom California v. Sierra Club*, 101 S. Ct. 1775; 68 L.Ed.2d 101 (1981) (only one of two federal agencies passing upon a plan need do an EIS). Even an analysis by a state agency may be given substantial weight. It may be adopted if it is first reviewed by a federal official exercising independent judgment. *Trinity*

Episcopal School Corp. v. Harris, 445 F. Supp. 204, 222-23 (S.D.N.Y. 1978), *rev'd on other grounds sub nom Karlen v. Harris*, 590 F.2d 39 (2d Cir. 1978), *rev'd sub nom Strycker's Bay Neighborhood Council, Inc. v. Karlen*, 444 U.S. 223 (1980) (*per curiam*), *District Court opinion aff'd*, 652 F.2d 54 (1981); *see Public Service Co. of Oklahoma* (Black Fox Station, Units 1 and 2), LBP-78-28, 8 NRC 281, 282 (1978).

This does not mean that a federal agency may completely abdicate its NEPA responsibilities. Although there may be an EIS prepared by another federal agency, each agency must consider environmental consequences at every stage of its decision. *Silentman*, *supra*, 566 F.2d at 241. It may do this by accepting, modifying, or even rejecting the analysis of the lead agency. *Id.* at 240. *Henry v. Federal Power Commission*, 513 F.2d 395, 407 (D.C. Cir. 1975); *Tennessee Valley Authority* (Phipps Bend Nuclear Plant, Units 1 and 2), ALAB-506, 8 NRC 533, 546-48 (1978).

The Appeal Board, in its decision on the Limerick construction permit, provided guidance on the type of review which NRC must perform on an environmental analysis done by another federal agency. In approving NRC reliance on an EIS prepared by the Delaware River Basin Commission (DRBC), the Appeal Board stated that it was "entirely appropriate for this Commission's staff to use that statement as a basis for its own assessment." 1 NRC at 189. While it is not entirely clear how extensive a review the Appeal Board believed the Staff had performed of DRBC's findings, we believe that the Appeal Board was approving reliance on the scientific data and expert scientific evaluation of the data on which the DRBC based its conclusions. These "underpinnings" would not require independent review by the Staff. *See* 1 NRC at 171. Conclusions based on these underpinnings as to the nature and extent of environmental impacts and the ultimate finding as to the total environmental impact of the project were to be reviewed to see if the Staff concurred in them. *Id.* at 186. If the Staff concluded that some impacts had not been adequately considered, it was to provide further information on the impacts in question. In the construction permit proceeding such information was provided through supplementary testimony. *Id.*³²

³² Our doubts about the extent of the NRC staff review approved by the Appeal Board stem from a comparison of the statement "without independently reviewing their underpinnings, the Limerick FES adopted the cost/benefit findings and conclusions contained in the DRBC impact statement" (1 NRC at 171) with the statement, "the staff went far beyond a mere uncritical factoring of the DRBC findings into its cost/benefit analysis. . . . [T]he staff reviewed DRBC's final environmental impact statement on the entire Point Pleasant Diversion project." (1 NRC at 186.) We believe our interpretation resolves the apparent inconsistency and is consistent with the teachings of the judicial and NRC decisions discussed in this memorandum.

More recently, the Commission addressed the question of whether EPA's findings on the aquatic impacts of a once-through cooling system may be treated by the NRC as conclusive. See *Public Service Company of New Hampshire* (Seabrook Station, Units 1 and 2) CLI-78-1, 7 NRC 1 (1978), *aff'd sub nom New England Coalition on Nuclear Power v. NRC*, 582 F.2d 87 (1st Cir. 1978). It concluded they may be. In doing so, the Commission stated:

But perhaps the strongest reason for accepting as conclusive the EPA determinations of aquatic impact is to avoid protracted relitigation of these factual issues. Where litigants have had one full and fair opportunity to contest a particular issue, they need not be given a second opportunity to reopen the whole matter before another tribunal where the same issue is relevant.

7 NRC at 26 (footnote omitted.)³³

This theme of not requiring relitigation of matters before a second forum was repeated by the Court of Appeals. See *New England Coalition on Nuclear Power v. NRC*, 582 F.2d 87, 98-99 (1st Cir. 1978). However, in *Tennessee Valley Authority* (Phipps Bend Nuclear Plant, Units 1 and 2), ALAB-506, 8 NRC 533, 545-47 (1978), the Appeal Board emphasized that unless there is clear statutory authority precluding the NRC from performing a NEPA review, the NRC must fulfill its NEPA duties. It may rely on the EIS of another agency, but it is not required to do so.³⁴

In *Seabrook*, the Commission cited a second reason to rely on EPA's evaluation of water quality impacts. The Commission concluded, 7 NRC at 24, 26, and the First Circuit agreed, 582 F.2d at 98, that section 511(c)(2) of the Federal Water Pollution Control Act (now called the Clean Water Act), 33 U.S.C. §1371(c)(2), would preclude the NRC from examining the impacts determined by EPA's evaluation. Hence, NRC was to accept EPA's determination of impacts and factor those impacts into its cost/benefit analysis. *Cf.*, *Tennessee Valley Authority* (Yellow Creek Nuclear Plant, Units 1 and 2), ALAB-515, 8 NRC 702, 712-15 (§511(c)(2) precludes NRC from imposing water quality monitoring provisions on a permit when that monitoring is not required by EPA).

In this proceeding, as at the construction permit stage, we are urged that consideration of certain matters by the NRC is not necessary because they have been considered by the DRBC. On March 17, 1971, the Point Pleasant Pumping Station, the Bradshaw Reservoir and Pumping Station, and the transmission main to the East Branch of the Perkiomen Creek were added to DRBC's Comprehensive plan for the Delaware River

³³ In *Seabrook*, the parties appearing before the NRC had participated in the EPA hearing.

³⁴ In *Phipps Bend*, the other agency which prepared an EIS, the Tennessee Valley Authority, was also the applicant for the license from the NRC.

Basin.³⁵ In connection with this action, the DRBC prepared a final statement of environmental impact. This was updated and presented to the Council on Environmental Quality as a Final Environmental Impact Statement (FEIS) in 1973. It was on this statement that the Appeal Board permitted NRC to rely in the Limerick construction permit proceedings. In 1979 both PECO and the NWRA filed applications with the DRBC to commence construction of the Point Pleasant Diversion project. The DRBC prepared an environmental assessment in response to these filings and in August 1980 issued a negative declaration on the impact of changes since the original FEIS. This was followed by decisions on February 18, 1981, approving the applications. Subsequently, the District Court for the Eastern District of Pennsylvania approved the negative declaration, noting that the modifications to the project essentially involved downscaling the project's size. *Delaware Water Emergency Group v. Hansler*, No. 80-4372 (E.D.Pa. Aug. 17, 1981).³⁶

Many matters which have changed since the issuance of the construction permit for Limerick have been considered by the DRBC. For example, water quality compatibility between the Delaware and the Perkiomen has been considered explicitly. See *Philadelphia Electric Co.* (Bradshaw Reservoir, Pumping Station and Transmission Main), DRBC No. D-79-52CP, slip op. at 5 (Feb. 18, 1981). When matters have been the subject of consideration by the DRBC, NRC need not ignore the DRBC's work and proceed as if the matters had never been studied. Nor, however, may the DRBC's estimation of impacts be adopted without further inquiry. Other changes followed both the construction permit and DRBC decisions. If these changes are significant, NRC must do its own independent evaluation of them in its FES because they have not yet been considered in a NEPA review.

The Staff has indicated (Tr. 415) that in evaluating the matters considered by the DRBC, it will engage in the same type of review which the Appeal Board endorsed at the construction permit stage. We interpret this to mean that the staff will do an independent review of the findings and the cost/benefit analysis performed by the DRBC. The underlying scientific data and inferences drawn from it through the exercise of expert scientific evaluation of the data may be adopted by the NRC staff without

³⁵ See *Philadelphia Electric Company* (Bradshaw Reservoir, Pumping Station and Transmission Main), DRBC No. D-79-52CP, slip op. at 4 (Feb. 18, 1981) (filed in this proceeding as an attachment to Applicant's Answer to Petition for Intervention of Del-Aware Unlimited, Inc. (Oct. 7, 1981)).

³⁶ The approved capacity of the proposed Bradshaw Reservoir, however, has been doubled from 35 to 70 million gallons. See *Philadelphia Electric Co.* (Bradshaw Reservoir, Pumping Station and Transmission Main), DRBC No. D-79-52CP, slip op. at 3 (Feb. 18, 1981).

independent evaluation. However, the NRC must exercise independent judgment with respect to conclusions about the environmental impacts based on interpretations of such basic facts. The underlying scientific data and the direct basic factual conclusions drawn from them will not change due to the context or perspective from which the agency views them. The environmental impacts weighed in the cost/benefit analysis, however, may be different when viewed in the context of a different or modified project. Mitigation measures which may not seem worthwhile from one perspective may have merit from another. Hence, these matters must be independently assessed. *Cf., Federal Trade Commission v. Texaco, supra*, 555 F.2d at 881 (FTC not collaterally estopped from relitigating issue previously resolved by Federal Power Commission because agencies had different perspectives and different substantive jurisdiction.) The Board believes this type of review will be appropriate. Such a review would follow the guidance of the Appeal Board concerning reliance on the DRBC, and would be consistent with precedent allowing reliance on analysis by another federal agency if the analysis is subject to some independent review.

The Appeal Board found that DRBC is a federal agency for NEPA purposes. 1 NRC at 187. While Judge Van Artsdalen expressed doubts about DRBC's status as a NEPA agency in *Delaware Water Emergency Group v. Hansler*, No. 80-4372, slip op. at 17 (E.D.Pa. Aug. 17, 1981), he did so in dictum only. Other federal judges, while not explicitly holding that the DRBC is a federal agency for the purpose of NEPA, have acted upon that assumption. *See, e.g., Bucks County Board of Commissioners v. Interstate Energy Co.*, 403 F. Supp. 469 (E.D.Pa. 1975); *Borough of Morrisville v. Delaware River Basin Commission*, 399 F. Supp. 469 (E.D.Pa. 1975), *aff'd*, 532 F.2d 745 (3d Cir. 1976). We find these decisions, together with the holding of the Appeal Board in the Limerick construction permit decision, 1 NRC at 187, persuasive authority that DRBC is a NEPA agency for the purposes of preparing an EIS. Even if we were to conclude that it is a state agency, however, the type of review we believe the Staff will perform satisfies the criteria as set forth above for reliance on state agency actions.

We are directed to a provision in the Delaware River Basin Compact which we are told creates a preclusion of the nature discussed in the *Seabrook* and *Phipps Bend* cases, *supra*. Section 15.1(s)1 provides, in part:

Nothing contained in this Act or in the Compact shall impair or affect the constitutional authority of the United States or any of its powers, rights, functions or jurisdictions under other existing or future legislation in and over the area or waters which are the subject of the Compact including projects of the Commission: provided, that *whenever 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) (emphasis added).

The Comprehensive Plan, to which all parts of the Point Pleasant diversion have been added, deals with immediate and long range development and use of the water resources in the basin. Pub. L. No. 87-328, §13.1, 75 Stat. 688 (1961). DRBC's function is to regulate water supply and control consumptive uses of water in the basin through development of the Comprehensive Plan. See 1 NRC at 191-92. We do not believe that the NRC is precluded by the Compact provision from considering all environmental questions arising from the diversion. We note that this provision is much less specific than was the section of the Federal Water Pollution Control Act which precluded NRC consideration of water quality impacts in *Seabrook* and *Phipps Bend*. However, in light of the DRBC's role in determining the uses for water in the basin, we believe that it bars us from reevaluating the DRBC decision to allocate water to the Limerick facility operating in the river follower mode. Beyond this however, we do not find that this precludes us from considering environmental impacts in the manner we have discussed for situations where a federal agency has done such an evaluation previously. Thus, although we will not look at the allocation decision itself, we might determine whether changes in the plan since the construction permit stage call for new mitigation efforts or would cause significantly increased environmental impacts such that overall alternative cooling methods should be examined.

In addressing contentions concerning the supplementary cooling water system, the Board will therefore consider the effect of the preclusion clause. We note, however, that although the District Court in *Hansler*, No. 80-4372, slip op. at 7, indicated there was federal concurrence in the February 18, 1980 DRBC decision, we are not aware of anything before the Board which would indicate that the federal representative concurred in any other DRBC decision. Without such concurrence, the statutory preclusion of NRC NEPA review is not applicable.

Because the Staff is presently undertaking its environmental review, we do not know the precise use it will make of the DRBC materials. We have stated that the type of use we believe the Staff contemplates is permissible under NEPA. Therefore, after the Staff supplies its environmental review of the supplementary cooling water system, we expect proponents of

admitted contentions concerning the supplementary cooling water system (Contentions Nos. V-14, V-15, V-16(a) and V-16(b)) to further refine their contentions. Where the Staff has elected to rely upon materials from the DRBC environmental evaluations, the specific reasons why such reliance is inappropriate in light of our statements here must be stated. We recognize that our discussion of what may be relied upon provides only general guidance. However, it is the Staff's role in the first instance to determine how to use the DRBC material.

The Corps of Engineers is presently considering some of the matters contained in the contentions presented to us. For example, the Corps is evaluating the impact of the Point Pleasant intake on the short-nose sturgeon. The discussion above on the weight to be given DRBC findings under NEPA applies equally to findings by the Corps. There is no statutory provision precluding NRC from performing its NEPA duties with regard to matters considered by the Corps. Therefore, these matters will have to be addressed by NRC in its FES. The Corps may have completed its study before the NRC DES is issued and its findings may be factored in. After the Staff's environmental review of the cooling water system is issued, we will expect intervenors to refine contentions which address areas where the NRC Staff has chosen to rely on the Corps in the same manner as we have indicated we will expect refinement of contentions dealing with reliance on DRBC materials.

In addition to NEPA concerns, we have heard arguments that we must suspend this proceeding until several agencies issue necessary permits for the supplementary cooling water system. We see no reason to grant such a continuance. It is much more efficient for this proceeding to progress, recognizing that other agencies, state, federal, and local, will simultaneously be working on permit requirements. See *Wisconsin Electric Power Company* (Koshkonong Nuclear Plant, Units 1 and 2) CLI-74-45, 8 AEC 928, 930 (1974). While it is true that the Applicant must have either certification from the state under section 401 of the Clean Water Act or a waiver by the state of the need for such certification before a license can issue, other permits are not a prerequisite to issuance of an operating license. Nor is this the proper forum to litigate whether other agencies should issue permits. Therefore, we may close our record without a showing that all permits have been received.

D. Portion of the Neshaminy Water Supply System to be Considered by NRC

In its contentions, Del-Aware addresses environmental impacts not only from the parts of the Point Pleasant Diversion which will be utilized just to

supply supplementary cooling water to Limerick, but also from the parts which will be used solely or jointly by the Neshaminy Water Resources Authority (NWRA). Del-Aware maintains that environmental effects of the entire Neshaminy Water Supply System (see Figure A) should be considered by the NRC. The Applicant argues that impacts of those parts of the water supply system owned by the NWRA but utilized to supply water to Limerick (the Point Pleasant intake and pumping station and the transmission main to the Bradshaw Reservoir) are not attributable to Limerick. The Staff apparently believes that the portion of the impacts of the joint part of the system (the Point Pleasant intake and pumping station, the transmission main to the Bradshaw Reservoir and the Bradshaw Reservoir) which is attributable to Limerick must be considered by the NRC, but the impacts of the portion of the system attributable to only the NWRA need not be.

We disagree with the Applicant's position that none of the impacts of the jointly utilized part of the system owned by the NWRA need to be considered by the NRC. The Appeal Board ruled at the construction permit stage that it was "beyond dispute" that impacts of the Point Pleasant diversion were to be taken into account in the Limerick environmental evaluation to the extent the diversion was expanded to accommodate Limerick. 1 NRC at 185.³⁷ The Appeal Board apparently included only the impacts of expanding the Point Pleasant diversion, instead of requiring that all impacts from the diversion be considered. In doing so, it apparently assumed that a plan for the diversion existed and that the plan for the Limerick cooling system would be added to it. Moreover, the Appeal Board believed that the diversion would be built whether or not it was to be utilized by Limerick.

Del-Aware now represents that the entire water supply system either would not be built or would be greatly scaled down if it were not being used, in part, to supply cooling water to Limerick. (Tr. 448.) The Applicant is unable to assure us this is not the case. (See Tr. 408).³⁸ Even so, if we are presented with a rational method of separating and determining what the incremental impacts of this addition are, we might limit our consideration to these incremental impacts.

³⁷ If the diversion were not considered in conjunction with the Limerick cooling water system, the segment of the cooling system which would be covered by the NRC's NEPA review would not be functionally useful. Thus, it would not satisfy the test of independent utility for segmenting NEPA. See discussion *infra* on independent utility.

³⁸ The DRBC apparently believes the Neshaminy Water Supply System is needed. See *Neshaminy Water Resources Authority* (Neshaminy Watershed Plan - Water Supply) DRBC No. D-65-76-CP(8), slip op. at 9 (Feb. 18, 1981 (filed in this proceeding as an attachment to NRC Staff Answer to Amended Petition to Intervene of Del-Aware Unlimited (Nov. 16, 1981)). This does not, of course, mean the project would necessarily be built.

Certain problems would remain. For example, the fact that the utility (PECo) is paying for the intake may make the impacts from the intake attributable to it. Cf., *Public Service Co. of Indiana, Inc.* (Marble Hill Nuclear Generating Station, Units 1 and 2), ALAB-459, 7 NRC 179, 196-98 (1978) (limited work authorization required for county road expansion paid for by applicant). Further, it appears likely that environmental impacts of a jointly used intake system and reservoir result from the total size and operation of the system and that they cannot meaningfully be separated. In the absence of such a methodology permitting separation, we will consider the total environmental impacts of the Point Pleasant intake and pumping station, the transmission main to the Bradshaw Reservoir, and the Bradshaw Reservoir itself.

To a large extent, questions about how impacts are to be apportioned are answered by the requirement under NEPA that cumulative impacts be considered. In *Kleppe v. Sierra Club*, 427 U.S. 390 (1976), the Supreme Court required that when pending proposals have cumulative or synergistic environmental effects their environmental consequences be considered together. *Id.* at 410; see also *Atchison, Topeka and Santa Fe Railway Co. v. Alexander*, 480 F. Supp. 980, 996 (D.D.C. 1979), *aff'd in part and rev'd in part on other grounds sub nom Izaak Walton League v. Marsh*, 655 F.2d 346 (D.C. Cir. 1981). In *Kleppe*, the Court referred to proposals pending before the same agency. Arguably, here the overlapping proposal (NWSRA use of the Point Pleasant diversion) is pending before the DRBC, a different agency. We do not believe this is a significant distinction. The impact on the environment is the same whether or not there are two agencies involved. As the court recognized in *Henry v. Federal Power Commission*, 513 F.2d 395 (D.C. Cir. 1975), NEPA's purpose must not be frustrated through divisions of agency responsibility "that would defeat a comprehensive and integrated consideration by reason of the fact that particular officers and agencies have particular occasions for and limits on their exercise of jurisdiction." *Id.* at 406. Thus, in *Henry* it was not sufficient that the FPC consider only the incremental environmental damage of the tap and valve part of a coal gasification project. Although the FPC would authorize only the tap and valve facilities, the environmental impacts of the remainder of the project (subject to the consideration of several other federal agencies) had to be considered by the FPC to satisfy NEPA. Operation of the Point Pleasant diversion is similarly a single project all portions of which should be considered together. Only if it can be shown that Limerick does not contribute to the cumulative environmental impacts of the jointly used parts of the Point Pleasant diversion (e.g., the Point Pleasant intake and the Bradshaw Reservoir) is their consideration in the NRC NEPA review not required.

The parts of the water supply system which will be used only by the NWRA (i.e., the transmission main from the Bradshaw Reservoir to the North Branch of the Neshaminy Creek, the North Branch Water Treatment Plant and the transmission mains from the treatment plant) are a different matter. Their consideration by the NRC is not required. Delaware argues that this part of the system would not be built by the NWRA or would be vastly reduced in size if it were not for the need to build the Point Pleasant intake and Bradshaw Reservoir for use by Limerick. (Tr. 448). However, the test for determining whether a project has been illegally segmented for NEPA purposes is not whether one segment would be not build but for the other.

Caution is necessary in dividing a project into segments for NEPA purposes in order to avoid arbitrary divisions which may hide significant total impacts. Consideration of a number of segments with small impacts while not considering their cumulative consequences is proscribed. The test for whether a project may properly be divided for purposes of environmental impacts has three parts. First, does the segment have independent utility? Second, does approval of the segment under consideration foreclose alternatives to the part of the project not being considered? Finally, is the entire plan sufficiently definite such that it is highly probable it will be carried out in the near future? See *Swain v. Brinegar*, 542 F.2d 364, 369 (7th Cir. 1976) (en banc); *Duke Power Company* (Amendment to Materials License SNM-1773 - Transportation of Spent Fuel from Oconee Nuclear Station for Storage at McGuire Nuclear Station), ALAB-651, 14 NRC 307 (1981).

Consideration of independent utility has generally focused on the utility of the segment currently being evaluated. Clearly the segment of the project which we have already indicated should be considered has independent utility because, even if the NWRA never completed its branch of the total system, the part considered will supply cooling water to Limerick.³⁹

³⁹ Recently, in *Tennessee Valley Authority* (Browns Ferry Nuclear Plant, Units 1, 2, and 3), ALAB-664, 15 NRC 1, 1982) *petition for review granted*, April 16, 1982, the Appeal Board reversed a holding by a Licensing Board that a proposal had independent utility, holding that independent utility could not be determined prior to issuance of the Staff's environmental assessment. That case is distinguishable. In that instance a majority of the Appeal Board found that it was impossible to determine in the early stages of litigation whether the project had independent utility and whether there were a variety of options available for the future. Cf., *Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-455, 7 NRC 47-51 (1978) (NEPA requires consideration only of the action and its unavoidable consequences; when there are several options for the future, an EIA may be limited to the present proposal). Here, because the segmentation will take place between two concurrent projects, the utility of and options for each segment are clear even before the Staff's EIS has been issued.

Because the present situation differs from the usual case in which the segment under consideration is expected to be completed before the other segment, one might argue that there must be independent utility to both parts of the project. The question changes from "will this be useful if the other segment is not built?" to "Would the rest be useful without this?" The present proposal, however, contains two projects each of which has independent utility. The one serves to supply cooling water to Limerick; the other supplies water to the area served by the NWRA.

The fact that the two projects are made compatible does not necessitate their joint consideration for NEPA purposes. See *Sierra Club v. Callaway*, 499 F.2d 982, 987 (5th Cir. 1974). Even if the two projects are "intimately related," it may be appropriate to treat them separately. See *Kleppe v. Sierra Club*, 427 U.S. 390, 408-414 (1976); *Sierra Club v. Hodel*, 544 F.2d 1036, 1039-41 (9th Cir. 1976). The projects have distinctly different purposes and they are independently useful.⁴⁰

It would be incorrect to say that the presence of the cooling water system for Limerick has no effect on the means by which the NWRA gets water. The intake location and the reservoir become fixed although the remainder of the project may change. However, Limerick is not foreclosing options the NWRA might have. Once again, the fact that the division of environmental impacts in this case is being done between two concurrent projects instead of between two projects, one of which follows the other in time, is significant. The NWRA's options are not being foreclosed as a result of Limerick because the NWRA has already committed to pursue one of those options. The NWRA has applied to the DRBC to have its chosen option added to the Comprehensive Plan and this has been done. This Board does not have the function of reviewing DRBC's determination that NWRA's water supply project is a beneficial and worthwhile use of the water resources of the Delaware River. Congress, in approving the Compact, made a judgment that the DRBC should determine what use should be made of the resources of the Delaware River. We must avoid interfering with DRBC's decisions in that respect. Cf., *United States Research and Development Administration* (Clinch River Breeder Reactor), CLI-76-13, 4 NRC 67 (1976) (ERDA EIS dispositive on issue of need when ERDA had overall planning function for demonstration breeder reactor project). In addition, by proposing a particular plan to the DRBC, the NWRA has already made its own decision with the effect of foreclos-

⁴⁰ In *Henry, supra*, the court did not permit the FPC to consider only tap and valve facilities when they were part of a larger project. However, the tap and valve facilities would not appear to be useful without the rest of the project. Nor did they have a separate purpose from the rest of the project.

ing other options it might have had. Thus, there is very little impact our approval of Limerick can have on the choices available to NWRA.⁴¹

The third part of the test for segmentation looks at how definite the plan is for the part of the project not being included. Because segmentation is not based on time in this case, this element of the test is inapplicable. The concern that expenditures made after approval of the first segment but before proposal of the second will distort the environmental review of the latter, see *Susquehanna Valley Alliance v. Three Mile Island Nuclear Reactor*, 619 F.2d 231 (3d Cir. 1980), cert. denied, 449 U.S. 1096 (1981), is not applicable when the second segment is a concurrent project. The degree of certainty about future actions is therefore irrelevant. Moreover, the NWRA project has already been subjected to an environmental review by the DRBC.

In the ordinary situation where one segment follows another in time, cumulative impacts of the first and second segment must be considered before the second segment can proceed. This is in lieu of a single impact statement encompassing all impacts including those which are cumulative. See *Kleppe v. Sierra Club*, 427 U.S. at 414 n.26; *Florida Power and Light Company* (Turkey Point Nuclear Generating, Units Numbers 3 and 4), ALAB-660, 14 NRC 987, 1009 (1981). Here, because the two segments are concurrent, there will be no later EIS which will consider cumulative impacts. Therefore, if we had been directed to any cumulative impacts arising from the portion of the project solely attributable to the NWRA, we might consider them. However, no such impacts have been pointed out to us and we envision none other than the impact on the total water resources available for allocation by the DRBC. As we found above, DRBC has sole authority to make water allocation decisions. Indeed, DRBC has already evaluated the two projects together under NEPA. As discussed *supra*, we recognize that there may be cumulative impacts from the jointly utilized parts of the system. These will be considered by the NRC.

In light of the above discussion, we hold that the part of the Neshaminy Water Supply System which is utilized solely by the NWRA need not be considered in the NRC's environmental review of Limerick.

⁴¹ We recognize that if the Limerick plant did not exist, the details of the NWRA water supply project might be different. However, as noted above, the fact that two projects have been designed to be compatible does not mean they must be considered together for NEPA purposes.

E. Impacts of Construction

Some of Del-Aware's proposed contentions seek to litigate environmental impacts of construction of portions of the supplemental cooling water system. Del-Aware argues that this Board, which is to rule on whether the Limerick facility should receive an operating license, has jurisdiction to consider the impacts specified. Jurisdiction over these impacts of construction would, according to Del-Aware, arise because of changes in both construction plans and circumstances such that the impacts as changed were not evaluated at the construction permit (CP) stage. The changes alleged since the CP approval are an alleged change in location of the proposed Point Pleasant intake (Contentions V-15 and V-16a) and the designation of the Delaware Division, Pennsylvania Canal on the National Register of Historic Places (Contention V-13), and the determination by the Pennsylvania historic preservation officer that the village of Point Pleasant is eligible for the National Register (Contention V-14). In addition, as we noted (note 36, *supra*, the proposed capacity of the Bradshaw Reservoir has been doubled from 35 to 70 million gallons.

We conclude that, under the Commission's licensing procedures, subsequent to the construction permit it is the NRC Staff which has jurisdiction, at least in the first instance, to consider changes in impacts of construction resulting from changed circumstances. However, as we discuss below, we are concerned that some of the contentions which allege impacts after operation of the supplemental cooling water system could be rendered substantially moot prior to consideration of their merits by virtue of the construction of the intake and reservoir. We are also concerned that the Applicant will incur the time and expense of major construction work not previously reviewed in a licensing proceeding which may later have to be undone in whole or in part in the event we find a change in location or design is necessary to mitigate impacts which would arise from operation. Accordingly, we attempt below to chart an approach which provides for early review by the Staff of construction impacts and early review before the Board of certain operational impacts. These operational impacts may be greater than thought at the construction permit stage because the proposed construction changes and official recognition of places of historic value were not foreseen.

The Staff itself agrees with Del-Aware that the Board has jurisdiction to consider construction impacts due to changed circumstances (Tr. 436-37), and the Applicant apparently does not disagree with respect to construction attributable to the facility (Tr. 463-67). Notwithstanding the view of the parties, the Board believes we do not have jurisdiction to consider construction impacts. However, we do have jurisdiction to consider the operational impacts of construction changes.

The Board's jurisdiction commences with and is governed by the hearing notice issued pursuant to 10 CFR §2.105.⁴² The proposed action before us as set forth by the Notice of Opportunity for Hearing (46 Fed. Reg. 42557, August 21, 1981) is to consider the issuance of an operating license. The Notice points out that, consistent with NEPA and 10 CFR Part 51, the Applicant's Environmental Report (ER) "discusses environmental considerations related to the proposed operation of the facilities," and that, in turn, the NRC Staff's EIS will analyze the ER.

The Notice is consistent with 10 CFR Part 51 which contains the Commission's "Licensing and Regulatory Policy and Procedures for Environmental Protection."⁴³ Section 51.21 provides that the Applicant's operating license stage ER discuss "the same matters described in §51.20" governing the construction permit stage ER, but only to the extent they differ or reflect new information from that discussed in the construction permit stage EIS. The incorporation by reference of "the same matters described in §51.20" does not require that changes in impacts of construction be considered in the operating license proceeding because §51.20 does not refer specifically to construction impacts. Rather, the list of matters to be considered in §51.20(a) pointedly refers to impacts of the "proposed action" or "the proposal." The proposed action before us in this proceeding is operation, not construction, of the facility.

Our view that review of construction changes is to be performed by the Staff is reinforced by the fact that the Limerick construction permit contains, among the general conditions for the protection of the environment, condition 3.E(3) which provides:

At least two weeks before engaging in a construction activity which may result in a significant adverse environmental impact that was not evaluated or that is significantly greater than that

⁴² 10 CFR §2.717(a). *Consumers Power Company* (Midland, Units 1 and 2), ALAB-235, 8 AEC 645, 646-47 (1974); *Public Service Company of Indiana, Inc.* (Marble Hill, Units 1 and 2), ALAB-316, 3 NRC 167, 170-71 (1976). See also, *Pacific Gas and Electric Company* (Stanislaus, Unit 1), ALAB-400, 5 NRC 1175, 1177 (1977).

⁴³ 10 CFR §50.57(a)(1) and the Notice of Opportunity for Hearing both require that construction of the facility be substantially completed in accordance with the construction permit and applicable requirements before an operating license may issue. Contrary to Del-Aware's assertion, this does not support the view that this Board should examine the impacts of construction. Indeed, it confirms that the legal and practical posture of an operating license proceeding is to examine the question of proposed operation as if the facility is completed. Often, construction is substantially complete at the time of an operating license decision by the Board. It would make no sense for a hearing timed to be complete at that stage to consider impacts of construction. Section 50.57(a)(1) and the Notice do confirm our view that we may consider construction practices and design where relevant to an issue of the safety or environmental impacts of the proposed operation.

evaluated in the Final Environmental Statement, the applicant shall provide written notification to the Director of Licensing.

Most, and perhaps all, Commission construction permits have a similar condition to govern situations where there are changes in circumstances which could change the previously assessed impacts of construction. This condition has been modified for nuclear plants which have construction permits issued more recently than the June 19, 1974 Limerick permits. The modified version makes clear that the Applicant's environmental evaluation must be a written one, and provides that the prior approval of the Staff must be obtained if there may be significant changes in adverse environmental impacts of construction, as follows:

Before engaging in a construction activity not evaluated by the Commission, the applicant will prepare and record an environmental evaluation of such activity. When the evaluation indicates that such activity may result in a significant adverse environmental impact that was not evaluated, or that is significantly greater than that evaluated in this Environmental Statement, the applicant shall provide a written evaluation of such activities and obtain prior approval of the Director of Nuclear Reactor Regulation for the activities.

Presumably, consistent with NEPA, under the condition in the Limerick CP, the Director of NRR can exercise his authority to stay a construction activity which may cause significant adverse impact not previously evaluated, until the NRC Staff can complete its evaluation of the changes.

The conclusion we reach here is in full accord with a decision of the Appeal Board, issued after the initial drafting of this section, which holds that a licensing board for an operating license proceeding:

... can authorize or refuse to authorize the issuance of an operating license. It does not, however, have general jurisdiction over the already authorized ongoing construction of the plant for which an operating license application is pending, and it cannot suspend such a previously issued permit.

Consumers Power Company (Midland, Units 1 and 2), ALAB-674, 15 NRC 1103 (1982) (footnote omitted).

Accordingly, Del-Aware's allegations that changes in construction impacts due to either changes in proposed construction or the changes in the recognition of the historical value of areas which may be impacted by construction should be directed as a request for action to the Director of Nuclear Reactor Regulation pursuant to 10 CFR §2.206(a). *Id.* at

1103-1104; see also *Portland General Electric Company* (Trojan Nuclear Plant), ALAB-451, 6 NRC 889, 891 at n.3 (1977).⁴⁴

Although we could refer Del-Aware's contentions alleging changes in construction impacts (V-13, V-14, V-15, V-16(a) and 16(b)) to the Director,⁴⁵ we leave it to Del-Aware to determine whether it wishes to take such action. Furthermore, we observe that it may be incumbent upon Del-Aware to better specify to the Director the alleged changes in construction impacts it believes to be significant and not previously evaluated. Portions of its contentions are too broad and vague to properly provide notice of this. We note that regardless of whether Del-Aware files a request for action before the Director, the Applicant and NRC Staff have an independent obligation to evaluate any impacts within the purview of condition 3.E(3) of the Limerick construction permit.

This does not end the matter. Del-Aware also alleges that there will be significant operational impacts not previously anticipated due to changes in circumstances since the construction permit stage. In our view, some of these alleged impacts, if proven, will be modifiable largely (or perhaps only) by changes in proposed construction. The Board has rewritten these contentions in a manner to facilitate their litigation as follows:

Contention V-14 - The esthetic impacts of the Point Pleasant pumping station, and associated hillside clearance and river-edge rip rap wall will adversely affect the peace and tranquility of the proposed Point Pleasant Historic District.

Contentions V-15 and V-16a (in part) - The intake will be relocated such that it will have significant adverse impact on American shad and short-nosed sturgeon. The relocation will adversely affect a major fish resource and boating and recreation area due to draw-down of the pool.

Contention V-16a - Noise effects and constant dredging maintenance connected with operations of the intake and its associated pump station will adversely affect the peace and tranquility of the Point Pleasant proposed historic district.

Contention V-16b - Seepage of water and toxics from Bradshaw Reservoir will cause a risk of groundwater contamination and hydraulic saturation.

While it is true that many environmental impacts of operation can best be mitigated by planning before construction, the opportunity for this to be

⁴⁴ We note that even if we had determined that this operating license Board had jurisdiction to consider environmental impacts of construction, the NRC Staff would have been called upon to provide its analyses and conclusions as part of the testimony before the Board.

⁴⁵ Cf. *Public Service Company of Indiana, Inc.* (Marble Hill, Units 1 and 2), ALAB-530, 9 NRC 261 (1979) (referring matter in tardy motion to reopen hearings to the Director).

considered is normally available at the construction permit stage. However, the operational impacts in the portions of the contentions summarized above allegedly are caused or substantially exacerbated by changes since the construction permits were issued. Therefore, there was no prior available hearing forum to consider those impacts for the NRC Limerick NEPA evaluation process. It is now within the jurisdiction of this Board to consider environmental impacts of operation. Accordingly, in order to avoid the risks of rendering the above portions of contentions substantially moot and/or requiring the Applicant to undo costly (in time and money) construction work, we determine that every effort should be made to resolve the above summarized issues prior to construction of the Point Pleasant intake and associated pump station and the Bradshaw Reservoir. In conjunction with our examination of these operational impacts, we will compare the alternatives, e.g., designs and locations, under NEPA. For that purpose we will look at the Staff's findings under condition 3.E.(3) of the construction permit or requests pursuant to 10 CFR §2.206 concerning construction impacts.

The Applicant shall advise us within thirty days of the service of this Order of the proposed schedule for commencement of construction of the above facilities. Further, at the time a firm schedule for construction is established the Applicant shall provide formal notice of its intention to begin construction work at least forty-five days (45) prior to the actual commencement of construction. The NRC Staff, the Applicant and Delaware, within thirty (30) days of the service of this Order, shall jointly submit a schedule for the filing of testimony and litigation of the above issues such that the goal of reaching a decision on those issues prior to construction can be achieved. It is hoped that informal discovery will suffice, particularly given the large amount of information which Delaware appears to possess on the subject. For purpose of the identified limited issues, there is no need to await the issuance of the Staff's complete formal environmental statements on all issues related to environmental impacts of operation of Limerick. The Staff should give priority to completing its review of the environmental impacts alleged in these contentions so that a decision on these issues can be made by this Board prior to construction of pertinent facilities. If this cannot be done, further interim actions may have to be considered by the Board, the Staff and/or the Commission to protect the status quo with respect to unreviewed effects of operation on the environment which can largely only be mitigated by consideration prior to construction of pertinent cooling water facilities. (The Staff would be free, of course, to later incorporate the analysis in its environmental statements). In preparing the analyses and testimony, the parties may rely on any evaluations of the changes per-

formed by other government agencies to the extent discussed elsewhere in this Order.

Our rulings on the particular contentions addressing environmental impacts of the supplementary cooling water system follow.

F. Particular Contentions

V-2 (FOE)

This contention alleges that the impact of the Limerick plant on the Schuylkill River has not been adequately assessed with regard to radiation contamination, low flow, and drinking water quality. Radiation contamination and water quality impacts were considered by the Licensing Board in the construction permit proceeding. 7 AEC at 1112, 1138-41. No new information is alleged. Moreover, determination of the water quality impacts resulting from an effluent discharge are committed by law under sections 401, 402, and 511 of the Clean Water Act to the Environmental Protection Agency and the State. NRC must use EPA's determination in its cost/benefit analysis rather than reaching its own determination. There is, thus, nothing to litigate on water quality impacts.

Low flow as an issue appears to challenge the allocation of cooling water for Limerick by the DRBC. The allocation decision may have been committed to the DRBC by law. Furthermore, there is no indication of changed circumstances since the NEPA evaluation at the construction permit stage.

Finally, we note the vagueness of this contention. The specific mechanisms which will cause the feared impacts are not specified. Nor are the impacts themselves described with particularity.

The Staff and the Applicant object to this contention. The Board does not admit it.

V-6 (CEPA)

This contention asserts that use of Delaware River water to cool Limerick will adversely affect the Philadelphia water supply. No basis is given for the assertion, and no further specificity is supplied. Thus, the contention is vague. Because this contention is so vague that the Applicant and Staff are not on notice as to what will be litigated, we do not admit it. Furthermore, this is a water allocation decision. NRC could be statutorily precluded from considering it by the Delaware River Basin Compact. Even if this contention were sufficiently specific to admit, we would have to consider whether, in light of the information we are requesting in connection with contention V-16, we are precluded from litigating it.

V-11 (Del-Aware)

This contention alleges that the supplementary cooling water system will cause serious unevaluated damage to the environment and economy of Bucks and Montgomery Counties and the Delaware River Valley. This contention is very broad as well as vague. It appears that where Del-Aware is concerned about a particular impact of the supplementary cooling water system, these impacts have been addressed specifically in other contentions. In addition, this contention encompasses certain construction impacts, impacts of the NWRA portion of the water supply system, and impacts considered at the construction permit stage which we have indicated are not open for consideration in this proceeding.

The Applicant objects to this contention. The Staff indicates it may be admissible in part. Believing the admissible parts are covered by other contentions, we do not admit it.

V-12 (Del-Aware)

This contention asserts that an operating license should not be issued for Limerick because the Applicant has not shown that the supplementary cooling water system will not cause substantial injury to the environment and economy of the Delaware River Valley. As in contention V-11, this contention appears to be a broad introduction to the more specific contentions which follow it. Indeed, we observe that the basis of this contention indicates that other contentions address more specifically concerns being raised here.

The Applicant and Staff object to this contention. We do not admit it.

V-13 (Del-Aware)

This contention alleges that construction of the intake as presently proposed will have substantial adverse effects on the Pennsylvania Canal, the canal house, and aquatic life in the Delaware River. All the impacts alleged in this contention result directly from construction work. As discussed above, this Board does not have jurisdiction to consider construction impacts. Del-Aware may properly raise this matter for NRC consideration by means of a request for action under 10 CFR §2.206(a). However, we do not admit this contention in this proceeding.

V-14 (Del-Aware)

This contention maintains that construction and existence of the Point Pleasant diversion will have a detrimental effect on the Point Pleasant

Historical District. As discussed previously, construction impacts are not within the jurisdiction of this Board. To the extent it deals with construction impacts, this contention is not admitted. However, impacts arising from the existence of the diversion are a somewhat different matter. These are impacts which will continue long past the construction phase of the project.

Subsequent to all environmental evaluations of the Diversion including the most recent one by the DRBC, the State Historical Preservation Officer determined that the Point Pleasant Historical District is eligible for listing in the National Register of Historic Places. This is a sufficiently significant change since the time the construction permit was issued that it merits present consideration.

The Corps of Engineers has stated that it will undertake the appropriate actions pursuant to the National Historic Preservation Act. The Corps is also preparing an environmental assessment of the diversion pursuant to NEPA. We recognize that the NRC also must include these matters in its own evaluation. The extent to which NEPA permits reliance on the environmental reviews of other agencies is discussed above. Reliance on the actions of another agency with respect to the National Historic Preservation Act is also appropriate. In this respect, we note that the lead agency concept has specifically been approved for projects under the Housing and Community Development Act of 1980, 42 U.S.C. §5320, where compliance with the National Historic Preservation Act is required. *See* 46 Fed. Reg. 42423 (1981) (to be codified at 36 CFR §801.4(g)). Moreover, the requirements of the National Historic Preservation Act may be satisfied by circulation of the draft environmental impact statement. 36 CFR §800.9. The lead agency concept would apply to the EIS under NEPA and, logically, the aim of avoiding duplicative work could only be achieved if it also applied under the National Historic Preservation Act.

The Applicant objects to this contention. The Staff finds it admissible. The Board finds that this is a matter which may best be considered prior to construction of the diversion since, as discussed above, any mitigation found necessary may be simpler before construction. The Board has rewritten this contention to include only its admissible components, page 1479, *supra*, and admits it as rewritten.

V-15 (Del-Aware)

In this contention, Del-Aware alleges that operation of the intake at Point Pleasant will adversely affect a spawning area for the American shad and a habitat for the short-nosed sturgeon. Since the construction permit was issued, and, indeed, since the DRBC completed its environmental

assessment, short-nosed sturgeon, an endangered species, have reportedly been discovered in the Delaware River. This is a change of sufficient significance to merit consideration at this time of the manner in which the sturgeon will be affected by the intake.

The impact that the intake might have on American shad was considered at the construction permit stage. We are informed by Del-Aware that since that time the location of the intake has been changed so that it is currently expected to be located in a spawning area for the shad. The Applicant has not disputed that the intake location has been changed. This is a change of sufficient significance to warrant present consideration of the impact the intake may have on the shad. We note that Del-Aware also alleges that since the construction permit stage, the Delaware River has become an important shad fishery and has been recognized as such by the State of Pennsylvania. We do not rely on these allegations as a basis for the contention because they are bare allegations without any citations provided as to the source of the information. However, if true, they are also the types of changes which merit consideration.

These are impacts which allegedly result from operation of the intake owned by the NWRA and utilized by the Applicant and the NWRA jointly. As discussed above, we will consider impacts resulting from operation of the intake, but if we are shown a reasonable manner for determining which of the cumulative impacts are attributable to the Applicant, we may limit our consideration to those impacts. As always, the Staff may rely on work done by other agencies within the guidelines we have set forth above.

Because changes in the plan for construction may be the best means of mitigating these alleged impacts, if mitigation is found to be appropriate, this contention is one which should be litigated prior to construction of the intake, as discussed above. To facilitate this, the Board has reworded this contention above (see page 1479), in combination with part of contention V-16(a).

V-16 (Del-Aware)

This contention asserts that operation of the supplementary cooling water system will adversely affect the water quality and water supply of the Delaware River and estuary. The only impact specifically mentioned is an increase in the salinity gradient. As to any other impacts, the contention is vague and without basis.

The Board understands the contention to be that the salinity increase will occur as a result of water withdrawal from the Delaware for the purpose of cooling Limerick. Actually, any salinity increase would be

attributable to the total water withdrawal, not just withdrawal for Limerick. As such, it is caused by the DRBC allocation decision.

If the federal representative concurred in the allocation decision, it is committed to the discretion of the DRBC by section 15.1(s)1 of the Delaware River Basin Compact. While the Board is aware that the federal representative concurred in the February 1980 DRBC decision, we do not know his role in earlier decisions or whether the February, 1980 decision can be considered as the operative allocation decision, as distinguished from the earlier DRBC decisions. Del-Aware, the Applicant, and the Staff are to advise the Board within thirty (30) days of the issuance of this order of whether the federal representative can be deemed to have concurred in the operation allocation decision for purposes of applying section 15.1(s) of the Compact.

If the Board decides that the preemption is not applicable, however, it is nevertheless not clear that the Board must consider this matter. DRBC has considered problems of water quality and water supply not only as a result of allocation of water to Limerick, but in connection with the water needs of the entire region. Reliance on the DRBC environmental evaluation would, therefore, appear reasonable. In the context of this subject matter, therefore, even if we should find that the statutory preclusion does not apply, Del-Aware would have a heavy burden of specifying why any NRC reliance on analysis by DRBC (or other agencies) was improper.

The Applicant objects to this contention. The Staff does not. We defer ruling on it for the present, but we will consider the effect of the statutory preclusion when we receive the information on federal concurrence in the DRBC allocation decision.

V-16(a) (Del-Aware)

This contention asserts that operation of the intake will adversely affect the water resources, peace and tranquility, and historic character of the Point Pleasant Historic District. This contention deals with new information, subsequent even to the more recent DRBC decision, in two respects. First, the location proposed for the intake has been changed. Secondly, the State Historic Preservation Officer has determined, as discussed above, that the Point Pleasant Historical District is eligible for listing on the National Register. We consider both these changes potentially significant.

In its statement of basis, Del-Aware mentions the impacts of construction activities. These would seem to be encompassed more specifically in contention V-14. They will not be included in this contention.

The Applicant did not address this contention in its filing. The Staff believes the contention is admissible. We admit the contention with the

expectation that it will be litigated prior to construction of the intake. Thus, if mitigation is found to be necessary and modification of the construction plans is the best way to achieve it, such mitigation would still be possible. To facilitate such early litigation, the Board has divided and reworded the contention as specified above.

V-16b (Del-Aware)

This contention alleges that there is a substantial risk of groundwater contamination and hydraulic saturation due to seepage from the Bradshaw Reservoir and the transmission mains. It is the Board's understanding after reviewing all the material filed before it on these issues that the size of the Bradshaw Reservoir has been doubled. For this reason, we will consider this contention as it relates to the Bradshaw Reservoir. Because we do not perceive that leakage from the transmission mains will have changed from what was anticipated at the time of the construction permit proceeding, we will consider such leakage only insofar as it is inseparable from our consideration of the leakage from the Bradshaw Reservoir (e.g., the cumulative impacts of the two).

The Staff believes this contention is admissible. The Applicant did not address this contention in its filings. We admit the contention as we have rewritten it, *see* p. 1479, *supra*, and expect that it will be litigated prior to construction of the Reservoir. This will permit changes to be made in the plan for construction if it is determined that mitigation is necessary for these alleged impacts and if such changes in the plan prove to be the best way to achieve it.

V-16c (Del-Aware)

In this contention, Del-Aware maintains that discharge of water into the Perkiomen and Schuylkill will cause toxic pollution and will cause destabilization and flooding of the Perkiomen.

Although the Applicant did not address this contention and the Staff believes it is admissible, we do not admit it. It lacks specificity. More importantly, the impacts on the Perkiomen and Schuylkill were considered at the construction permit stages. *See* 7 AEC 1140-41; 1 NRC 186. None of the changes alleged in the filings before us or at the prehearing conference would appear to affect discharges into the Perkiomen or the Schuylkill. Therefore, we hold that this matter is not appropriate for consideration now.

V-17 (Del-Aware)

This contention alleges that impacts of the portion of the Point Pleasant diversion utilized solely by the NWRA should be treated as impacts of Limerick. It is completely legal to divide NEPA consideration of a project between agencies if certain tests, discussed above, are met. As we found above, consideration of the part of the diversion project used only by the NWRA is not required.

The Applicant and the Staff object to this contention. We do not admit it because it seeks more than is required by law.

V-18 (Del-Aware)

This contention alleges that the Point Pleasant diversion will cause major dislocation and environmental damage in Bucks County due to induced growth. It is alleged that growth will be induced as a means of providing a broader base from which the NWRA can collect the cost of its Chalfont plant. Preliminarily, we note that the type of damage feared is vague and that growth of this type seems speculative. In addition, the impacts alleged will result from the NWRA portion of the diversion and the need to finance it. As discussed above, it is not necessary for the NRC to consider impacts caused by the part of the Diversion used only by the NWRA.

The Applicant and the Staff both object to this contention. We do not admit it.

V-19 (Del-Aware)

In this contention Del-Aware alleges that the Applicant has failed to show that the supplementary cooling water system is preferable to alternative systems available to it. The alternatives suggested are storage on the Schuylkill River, dry cooling towers or deletion of unit 2.

Alternatives to the proposed supplementary cooling water system were considered at the construction permit stage. Only if we were shown that the environmental impacts of the system had significantly increased would we reconsider the acceptability of this method of supplying cooling water. No such showing has been made. Indeed, there has not even been a showing of the availability of the alternatives. Use of supplemental reservoir on the Schuylkill, for example, would require approval by the DRBC which has already approved the present system, apparently after considering the option of a reservoir on the Schuylkill. Nor is there any indication that dry cooling towers are presently a viable option.

The Applicant objects to this contention, but the Staff does not. We hold that it is not an admissible contention.

V-20 and V-21 (Del-Aware)

These contentions allege that the NRC cannot issue an operating license until the Applicant has received a water quality certification under §401 of the Clean Water Act and permits for discharges into the Schuylkill River and the Perkiomen Creek from the Pennsylvania Department of Environmental Resources and permits from the Corps of Engineers for discharges and obstructions. As discussed above, it is not legally necessary that all such permits be obtained before the operating license is issued by the NRC. Therefore, this contention, objected to by the Applicant and believed by the Staff to be admissible only as to the legal issue of whether the NRC could act without the permits having been issued, is not admitted. To the extent any arguably necessary permits, such as a §401 certification, are not issued if and when an operating license would otherwise issue, that legal question can then be addressed.

IV. OTHER CONTENTIONS

A. General Discussion

In this section, we rule on the admissibility of the many contentions not already discussed above in connection with the participation of particular parties and the water issues. With respect to some contentions, the parties agree that the information has not yet been provided fully in PECO's application documents. In such instances, the contention is reasonably specific at the time in alleging the lack of information. However, when the information is provided, the contention will have to be made more specific and allege defects based on the information or allege in what respect the information is still insufficient. We have conditionally admitted such contentions. It is requested that a conditionally admitted contention be made specific at the appropriate future time to be established based on the information later supplied by the Applicant. The failure to do this, or to explain why the contention then cannot be particularized further in light of the new information, will result in automatic dismissal of the contention. Informal discovery may proceed on conditionally admitted contentions in the same manner as we discussed below for all admitted contentions. At the time we consider instituting formal discovery, we will welcome the parties' advice as to whether formal discovery should then also begin for conditionally admitted contentions.

It should be noted that as the time for hearing approaches, Intervenor will be required to consider expressly whether contentions should be better focused or rephrased in light of circumstances and information available at that time. However, a decision not to modify a fully admitted contention will not result in its automatic dismissal, unlike a conditionally admitted contention.

With the exception of later written clarification of some of the Probabilistic Risk Assessment contentions supplied by Intervenor, the wording of all contentions discussed below may be found in the single document comprising the coordinated filing of contentions in this proceeding, dated November 24, 1981. Accordingly, due to their total great length, the contentions are not repeated verbatim in this Order. As will be seen, given our treatment of the PRA contentions, it is not necessary to include the modifications of the wording of some of those contentions in this Order.

B. Probabilistic Risk Assessment (PRA) Contentions

The Supplemental Petition of Coordinated Intervenor (Nov. 24, 1981) includes one general contention, under the heading Technical Safety Issues, relating to the Probabilistic Risk Assessment performed by the Applicant in response to a request by the Staff.⁴⁶ This general contention states:

The Applicant's Probabilistic Risk Assessment (PRA), insofar as it is to be used by the Nuclear Regulatory Commission in determining whether the operation of the Limerick facility may constitute a disproportionate portion of the societal risk from nuclear power reactors, and thus constitutes an undue risk to the public due to its siting in a heavily populated area and to its proposed power levels, is inadequate and deficient.

The Supplemental Petition lists 32 Contentions, numbered I-1 to I-32, each of which alleges inadequacies or deficiencies in the PRA or in the proposed comparison by the Applicant and the Staff of the Limerick PRA and the WASH-1400 PRA. The PRA contentions were advanced by LEA and/or Keystone.⁴⁷

This Board had some initial uncertainty as to precisely what use would be made by the Staff of PRA in its review of the operating license application (in conformance with 10 CFR Parts 50 and 51) and to what extent the PRA should be considered in this proceeding.

⁴⁶ Letter from D. G. Eisenhut (USNRC) to E. G. Bauer, Jr. (Philadelphia Electric Co.), Risk Evaluation - Limerick Generating Station, Units 1 and 2, May 6, 1980.

⁴⁷ As a follow-up to the extensive discussion of the PRA contentions at the prehearing conference, at the Board's request, LEA and Keystone filed a written clarification on January 18, 1982 of a number of their PRA contentions.

This uncertainty stemmed from consideration of several factors, as discussed below.

1. NRC Statement on Risk Assessment and the Reactor Safety Study (WASH-1400) In Light of the Risk Assessment Review Group Report - Jan. 18, 1979.

This Statement found, in part, that it did not regard as reliable the WASH-1400⁴⁸ numerical estimate of overall risk of reactor accident. The Commission, however, supported the extended use of probabilistic risk assessment in regulatory decision making, taking due account of the reservations expressed in the Risk Assessment Review Group (Lewis) Report.

2. Statement of Interim Policy - Nuclear Power Plant Accident Considerations Under the National Environmental Policy Act of 1969. ("Class 9 policy statement")⁴⁹

This Statement includes the position of the Commission that in the analysis and discussion of environmental risks attributable to accidents, approximately equal attention shall be given to the probability of occurrence of radiation or radioactive material releases and the probability of occurrence of the environmental consequences of those releases. The Commission in this Statement noted that while there are uncertainties in the application of risk assessment methods, it expected the major uncertainties to be identified in probabilistic estimates. Notwithstanding uncertainties, the Commission found in the Statement that ". . . the state of the art is sufficiently advanced that a beginning should now be made in the use of these methodologies in the regulatory process, and that such use will represent a constructive and rational forward step in the discharge of its responsibilities." The Staff is also to consider the likelihood that substantive changes in plant design features may be more easily incorporated in plants when construction has not yet progressed very far.

We also note, from the documents served by the Staff on January 28, 1982, the following guidance from NUREG-0885, Issue I. "U. S. Nuclear Regulatory Commission Policy and Planning Guidance 1982", p. 10: ". . . Quantitative risk assessment techniques will be used to estimate the relative importance of potential nuclear power plant accident sequences" and "Special attention should be given to using probabilistic assessment techniques where the data warrants such use and in areas especially amenable to risk assessment, e.g., in licensing reviews as appropriate, dealing with generic safety issues, . . . evaluating new designs. . . ."

⁴⁸ WASH-1400, Reactor Safety Study, October 1975.

⁴⁹ 45 Fed. Reg. 40101 (1980).

3. The Staff, in requesting the PRA for Limerick, using the WASH-1400 methodology, believed the Limerick facility might present a disproportionately high segment of the total societal risk from reactor accidents, due to a combination of factors which include high population density and proposed power level. Further, the Staff said that since the purpose of the proposed Limerick study is to evaluate a relative risk for the Limerick facility, it believed that the use of WASH-1400 in this manner would be proper.⁵⁰

4. The Applicant argues (in its "Answer", Dec. 7, 1981) at pp. 9-12 that the probabilistic risk assessment (PRA) requested by the Staff is not part of the application for operating licenses. Applicant notes the lack of any requirement for a PRA in 10 CFR Parts 50 and 51 and concludes from the Indian Point discretionary hearing proceedings and accompanying orders that the Commission expressly reserved to itself the determination as to the form for generic consideration of the question of operation of reactors in areas of high population density.

More recently, the Applicant has filed a "suggestion of mootness", dated April 19, 1982, on the basis of an April 5, 1982 speech given by Chairman Palladino before the American Nuclear Society on probabilistic risk assessment. The Applicant believes the speech supports its view that there is a separation between the "regulation process" (a term used in the Chairman's speech) where PRA may be used by the NRC, as distinguished from the "licensing process" (Applicant's term) which would include this proceeding. Applicant continues to assert that the Limerick PRA may not be considered within what it terms the NRC "licensing process" and therefore not in this hearing.

The Board finds that the formal Commission "Class 9" policy statement cited above makes clear that it is not only permissible, but contemplated by the Commission, that PRA techniques will be used in evaluating the probability and consequences of nuclear power plant accidents and radioactive releases as part of the process in deciding whether an operating license should be issued.

In addition, as noted by the Staff in its May 10, 1982 response to Applicant's suggestion of mootness, the Commission has held in an individual licensing proceeding that although the Commission is proceeding generically on plans for developing a safety goal:

". . . the pendency of the safety goal matter should not inhibit the boards from examining closely any accident sequence which in their judgment poses an unacceptable risk to health and safety. Probabilistic or numerical calculations may be used in such an

⁵⁰ See n.46, *supra*.

examination and boards have a responsibility to mandate whatever mitigative actions they deem necessary to protect adequately the public health and safety when such actions are supported by the record."

Florida Power & Light Co. (St. Lucie, Unit 2), CLI-81-12, 13 NRC 838, 843-44 (1980).

It is not clear to the Board at this stage of the Staff's review what specific use it will make of the Limerick PRA. Indeed, many of the contentions raise concerns that possible applications by the Staff of the PRA, in comparison with WASH-1400, would not be valid for the reasons stated. We do note that the Staff has explicitly requested a PRA that will permit an evaluation of the relative risk for the Limerick facility, by comparison of the risk of the Limerick facility at the Limerick site with the risk of the WASH-1400 reference facility (i.e., the Peach Bottom facility, also a boiling water reactor, located at a "composite" site reflecting an average of U.S. power reactor sites).

In addition, the Staff believes that the PRA will prove useful not only as a basis for comparison to the WASH-1400 reference facility, but also to alert the Staff to any particular design problems with Limerick in the course of its review. Tr. 205, 239-40.

While it is too early to tell the specific uses the Staff will make of the PRA, it is certain that, as endorsed by the Commission's policy statement, the PRA could be applied in both the safety and environmental review to determine compliance of Limerick with the regulations initially performed by the Staff and then subject to possible litigation in this proceeding. For example, a part of the comparison with the WASH-1400 reference case in the PRA could disclose special risks which must be protected against for Limerick. Also, solely as part of the direct review of Limerick, without the comparison to other PRA results, the Limerick PRA could disclose risks in the current design which must be addressed, possibly by design changes or other mitigative actions, in order for Limerick to meet the regulations. The Staff indeed plans to factor the results of its PRA review into its safety and environmental review as part of its review of the applications. The PRA review will form part of the bases for the Staff's determination of whether it believes the findings required in 10 CFR §50.57 have been met, and therefore whether it believes the plant should be licensed. Tr. 168-69.

We agree with the responses of the NRC Staff (May 10, 1982), LEA (April 23, 1982) and the Commonwealth of Pennsylvania (May 4, 1982) to the extent that we may place no reliance on the Chairman's speech — it is an informal speech — and not a statement of Commission policy. We further agree that the Chairman's remarks are not inconsistent with the Commission policy statement we have in part relied upon in finding that

the Limerick PRA should be considered in this proceeding. The Applicant cites no supporting reasoning for its attempted distinction between the "regulatory process" phrase used in the Chairman's speech and this licensing proceeding. We do not agree there is such a distinction, at least in the context of the speech and the PRA issue in this proceeding.

We see no reason to consider certifying the question to the Commission of whether Limerick PRA may be considered in the proceeding on the basis of the speech relied on by Applicant, or any other reason. The contemplated emerging use of PRA in proceedings is set forth in the Commission's above-cited policy statement and the *St. Lucie* decision, *supra*. Particular application of the PRA results, and the validity of the analysis leading to these results, in a matter which will have to be determined on the merits in the factual context before us.

The Staff has objected to several of the proposed PRA contentions both before and after clarification by Intervenors, on the grounds that the contention focuses on the adequacy of the WASH-1400 study and would in the Staff's view require "perfection of the WASH-1400 baseline." The Staff explained at the prehearing conference that it agrees with LEA/Keystone that the methodology of WASH-1400 can be litigated in this proceeding in the context of whether a proper basis for comparison was used in reaching conclusions about Limerick. Tr. 234-35. As also explained by the Staff, some of the contentions it objected to suffered, in the Staff's view, the defects of appearing to directly require that the reference base case be redone for a certain aspect with no specific tie-in as to why a comparison between WASH-1400 and Limerick would therefore be inappropriate. Tr. 234-35.

It appears to this Board that the differences between LEA/Keystone and the Staff may be more semantic than real. The Staff does not dispute, and the Board finds, that Intervenors are entitled to show why they believe any specific aspects of the comparison which will be made by Applicant and the Staff between Limerick and the reference case are inappropriate. The Staff itself plans some adjustments in the cases being compared to improve in its view the validity of the comparison or to test the sensitivity of differences. On the other extreme, it would not be useful, and would be irrelevant to a decision with respect to Limerick, to litigate the adequacy of WASH-1400 as an end in itself with no relation to the effect on the judgment made for Limerick.

The Staff and Intervenors both expressed the view that further negotiations between them would be fruitful in stipulating to the admissibility of PRA issues which would be better organized and would provide a better basis of common understanding of what would be litigated. Tr. 211-14. In addition, some of the contentions were necessarily pleaded before full

information was included in the Applicant's PRA, and well before it could be clear what the Staff review of PRA would include. It would be useless to admit such contentions now, and then find that the information later available changes the thrust of or removes the basis for the contention.

In addition, the Applicant was apparently unwilling to negotiate possible language of contentions so that at least the issue could be understood and agreed to by all parties, without prejudice to Applicant's right to object to admissibility, prior to having a ruling on its general opposition to any litigation of the PRA in this proceeding. We have now ruled against Applicant in its general objections to the subject of PRA. At the prehearing conference, the Applicant was desirous of having its technical expert explain where in the PRA certain things were covered in a manner contrary to that alleged in some contentions. There was insufficient time to allow this at any useful length. It also would have been impossible for Intervenor and Staff to respond at the moment and for the Board to focus on it at the time. Prior negotiations could have assisted this. In fairness to the Applicant and to avoid needless litigation where the parties' disagreements may be narrowed, that process of explanation by Applicant should now take place in negotiations among the Staff, Applicant and LEA/Keystone.

We rule that the general PRA contention quoted at the outset of this section is admissible, subject to specification. We find that many of the 32 individual contentions supply the specification, and would be admissible. However, we do not rule on them *seriatim* as they are set forth now. The parties to the PRA issues are directed to negotiate and prepare PRA contentions, with the parties' views on their admissibility. This will be required within about a month or two after the Staff's review of the PRA is issued. The affected parties shall prepare a schedule for submission as that time nears. In the absence of a different choice by LEA and Keystone, LEA shall be the lead Intervenor on all PRA contentions and all PRA matters should be coordinated through counsel for LEA. Discovery may proceed on the PRA in the same manner described below in general for contentions which are admitted at this time. A final round of formal discovery, if necessary, will be permitted after the PRA contentions as they are finally negotiated are ruled on.

C. Other Group I Contentions

I-33 (LEA)

This contention, in each Subpart A through L, alleges that the Applicant has failed to address adequately certain of the TMI action plan

requirements contained in NUREG-0737. The Applicant agrees that most, if not all, such information still has to be provided in future amendments to the application. LEA believes that with respect to at least one item, instrumentation to indicate inadequate core cooling (subpart H of the contention), there is enough information now to allege Applicant's plans will be inadequate. The Staff does not object to the contention. With one exception, noted next, the contention is conditionally admitted, with required specification (or explanation why no further specification is possible). The one exception is Subpart J dealing with emergency support facilities. It should be advanced, if LEA wishes later to pursue it, with specificity and bases after emergency plans are available, as part of the emergency planning contentions. We note that some of the Subparts of I-33 should be broken down into separate subjects when they are specified, e.g., Subpart B relating to many TMI action plan requirements.

I-34 through I-38 Accident Monitoring (LEA)

These contentions deal with the Applicant's capability to monitor conditions during and following an accident. Intervenor LEA argues *inter alia* that Applicant has neither demonstrated compliance with the latest revision of Regulatory Guide 1.97, "Instrumentation for Light-Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," nor provided justification for noncompliance. Applicant contends that LEA must specify some inherent problem with the design construction or implementation of procedures for the plant, even though the application is not fully developed in the subject area of these contentions. The NRC Staff takes the general position that it is appropriate at this stage of the proceedings to plead the inadequacy of portions of the application. The Staff finds I-34 admissible but recommends denial of I-38. Contention I-38 asserts that sampling capability should be based on an envelope accident sequence beyond design basis accidents. Staff contends I-38 is an impermissible attack on the Commission's General Design Criteria (GDC) in that it requires analysis of post-accident sampling capability for accidents beyond those required to be considered.

GDC 64 requires monitoring "for radioactivity that may be released from normal operations, including anticipated operational occurrences, and from postulated accidents." Staff interprets "postulated accidents" to be limited to DBA LOCA's. LEA contends the regulations should not be read that way, and given the Commission's position on beyond-design-basis accidents since TMI (related to NEPA analysis and emergency planning, for instance) it makes little sense to interpret "postulated accidents" as DBA LOCA's only. The Board agrees with LEA.

The Board conditionally accepts these contentions subject to later refinement and specification when the additional information has been furnished or the relevant documents filed.

I-39 (LEA)

LEA alleges that Applicant's pipe storage practices result in corrosion and the introduction of foreign substances into the pipes resulting in unsatisfactory pipe performance during plant operation and thereby putting the health and safety of the public in serious jeopardy. The matter is pending between Applicant and Staff. Applicant argues that the existence of an unresolved item between Applicant and Staff does not automatically support a contention, further stating that there is no claim that Staff is not handling the issue properly and no allegation that the matter cannot be resolved prior to licensing. The Staff recommends admission. The Board admits this contention.

I-40 (LEA)

This proposed contention asserts that the Limerick FSAR should contain a comprehensive, nonevasive documentation of deviations, including justifications for nonconformance (i.e., from Regulatory Guides, Branch Technical Positions and Standard Review Plans). It further asserts that whether or not Limerick conforms to a Regulatory Guide is often not directly stated. Rather the issue of conformance is evaded by the use of such terms as "evaluated to be in conformance with the intent . . ." and "in conformance subject to clarification." When nonconformance is admitted, justification for nonconformance is often omitted. The contention does not provide specific examples.

With respect to comprehensive documentation, the Staff observed that the Commission regulations did not require applicants to document deviations from the Regulatory Guides, Branch Technical Positions and the Standard Review Plan. The Staff believed that this part of the contention, therefore represented an attack on the adequacy of the Commission's regulations.

The Board notes that the Commission recently published a final rule entitled "Rule to Require Applicants to Evaluate Differences from the Standard Review Plan" which became effective May 17, 1982. 47 Fed. Reg. 11651 (1982). This rule, however, applies only to operating licenses docketed after that date. The rule therefore would not apply to the applications for operation licenses for the Limerick plants because they were docketed before that time. Moreover, the rule does not require

documentation of deviations from Regulatory Guides or Branch Technical Positions except as they are incorporated in the Standard Review Plan. The Staff argues that the fact that the Commission has felt it necessary to issue a proposed rule is an indication that the Commission's interpretation is that regulations applicable to applications filed prior to May 17, 1982 do not require and cannot be inferred to require a documentation such as LEA seeks to require by this contention.

With respect to the part of the contention that asserts that nonconformance is admitted (in the FSAR), the Board finds that LEA has made no specific assertions of why such deviation is unacceptable. The Board conditionally admits this proposed contention at this stage of the proceeding, subject to LEA's further development of specific contentions concerning deviations from Regulatory Guides or other regulatory practice and their bases within 30 days from the service of this order. Staff and Applicant may respond within the time permitted for answers to petitions to intervene. 10 CFR §2.714a.

I-41 (LEA)

This proposed contention has two parts. First, it asserts that a systems interaction analysis must be done for Limerick, citing Unresolved Safety Issue A-17, Systems Interactions in Nuclear Power Plants, and the TMI Action Plan (NUREG-0660, Item II.C.3), Systems Interaction. Second, it asserts that a plant-specific review of the effects of control system failures must be done at Limerick, citing Unresolved Safety Issue A-47, Safety Implications of Control Systems. The Staff would admit this contention; the Applicant states that these are issues which will be addressed during the course of review.

The Board conditionally admits this contention at this stage of the proceeding, subject to the development of specific contentions and their bases after the Applicant provides its further information addressing these two issues.

I-42 (LEA)

This proposed contention asserts that environmental qualification of safety-related electrical equipment is critical to the safe operation of Limerick and that such lengthy postponement of resolution of this matter will inevitably mean application of a lesser safety standard to Limerick than is required or should be permitted. Reference is made to Unresolved Safety Issue A-24, Environmental Qualification of Safety-related Electrical Equipment (NUREG-0588).

The Applicant intends to submit an equipment qualification report to the NRC at least four months in advance of the expected date of issuance of a full power license, as specified in a November 25, 1980 memorandum from the Staff to all Applicants for operating licenses and holders of construction permits.

The Board finds this proposed contention necessarily speculative at this stage of the proceeding. We admit it subject to the development of specific contentions and their bases on particular aspects of the planned environmental qualification of equipment after sufficient information regarding such plans is finished as part of the Application.

I-43 (LEA)

This proposed contention asserts that this Applicant has not adequately addressed Staff resolutions of Unresolved Safety Issues A-8, Mark II Containment Pool Dynamic Loads, and A-39, Determination of Safety Relief Valve Pool Dynamic Loads and Temperature Limits for BWR Containment.

The Applicant states that these matters will be addressed during this course of the review. The Staff would admit the proposed contention.

The Board, while finding the proposed contention necessarily speculative, at this stage of the proceeding, admits it subject to the development of specific contentions and their bases after the Applicant addresses these matters.

I-44 (LEA)

This proposed contention asserts that Unresolved Safety Issue A-43, Containment Emergency Sump Performance, has not been addressed in the FSAR, because, according to the Applicant, A-43 does not apply to Limerick. The Problem Description of A-43 states, in part, "the concerns relative to debris, blockage, and hydraulic performance also apply to boiling water reactors during recirculation from the suppression pools, and will also be addressed."

The Applicant has stated that this matter will be addressed during the course of the review. The Staff would admit the proposed contention.

The Board, finding the proposed contention nonspecific in terms of whether the Applicant does not, or will not, meet the Staff requirements resulting from resolution of A-43, conditionally admits it at this stage of the proceeding, subject to the development of specific contentions and their bases after the Applicant addresses this matter.

I-45 (LEA)

This proposed contention asserts that the Applicant should be required to maintain his commitment to Alternate 3A requirements described in Volume 4 of NUREG-0460 (for comment) (March 1980), Anticipated Transients Without Scram (ATWS) for Light Water Reactors, even if the final version in a promulgated ATWS rule of the 3A requirements is less strict, and to comply with any more stringent requirements that may appear in the final version of NUREG-0460, Volume 4.

The Applicant states that he is proceeding with his commitment to Alternative 3A of Volume 4 of NUREG-0460 (Tr. 523). The Staff would admit this proposed contention.

The Board notes that the Commission is proposing an additional §50.60 to 10 CFR Part 50, Acceptance Criteria for protection against anticipated transient without scram events for light water cooled nuclear power plants. 46 Fed. Reg. 57521 (1981). Three alternatives for this §50.60 were proposed for comment. The comment period was to expire April 23, 1982. Clearly, the ultimate requirements for the Limerick Station to meet ATWS considerations are not known at this time.

The Board, finding the proposed contention nonspecific and speculative as to whether the Applicant will meet the Commission requirements for ATWS, conditionally admits it at this stage of the proceeding, subject to the development of specific contentions and their bases and subject to possible limitation depending upon the outcome of the ATWS rulemaking proceeding.

I-46 (LEA)

This proposed contention asserts that the Applicant has not shown that it has resolved the concerns of Unresolved Safety Issue A-10, BWR Nozzle Cracking. The Staff resolution of this USI, NUREG-0619, requires consideration of this problem on a case-by-case basis.

The Applicant states that this matter will be addressed during the course of the review.

The Board, finding the proposed contention necessarily nonspecific and speculative at this stage of the proceeding, as to whether the Applicant will meet the requirements for BWR Nozzle Cracking, conditionally admits it subject to the development of specific contentions and their bases after the Applicant addresses this matter.

I-47 and I-48 (Lochstet)

These contentions are not admitted as discussed above as part of our ruling on Dr. Lochstet's lack of standing and failure to show he should be permitted to intervene in our discretion.

I-49 (Lewis)

This proposed contention asserts that an electromagnetic pulse (EMP), generated by an accidental explosion of one of our own nuclear devices at high altitude, would destroy or disrupt controls within Limerick that are important to safety, thereby threatening the health and safety of the public.

As basis for this proposed contention, Mr. Lewis cites recent literature that supports the conclusion that an EMP could have wide-ranging disruptive effects on electrical, and particularly electronic, systems.

A similar contention was raised in *Cleveland Electric Illuminating Company* (Perry Nuclear Power Plant, Units 1 & 2), LBP-81-42, 14 NRC 842 (1981). In that Board's Memorandum and Order, the Board found that "[intervenor's] example, involving a missile silo accident, flows from the deployment of weapons by the United States. Hence, that risk is explicitly barred from consideration by §50.13." *Id.* at 845. In addition, the Board found that the *Perry* intervenor failed to provide a basis for believing that there is any plausible mechanism by which there could be an accidental explosion of a nondefense related nuclear device at sufficient altitude to create a problem of the sort described in the *Science* news article. *Id.*

Notwithstanding Mr. Lewis' postulation of an accidental explosion at high altitude, this Board finds, similar to the *Perry* Board finding, that any such explosion of "one of our own nuclear devices" would involve the deployment of weapons by the United States. Hence, that risk is explicitly barred by 10 CFR §50.13, Attacks and destructive acts by enemies of the United States; and defense activities.⁵¹

This proposed contention is rejected.

Should any of the parties seek further information on the effect of an EMP on a nuclear plant, we refer the parties to a Commission Information Paper, Status Report on the Evaluation of the Effects of Electromagnetic

⁵¹ §50.13 states, in part; "An applicant for a license to . . . operate a production or utilization facility. . . is not required to provide for design features or other measures for the specific purpose of protection against the effects of. . . (b) use or deployment of weapons incident to U.S. defense activities."

Pulse (EMP) on nuclear power plants. Secy-82-157, April 13, 1982. This paper, obviously, was not available at the time of the prehearing conference.

I-50 (Lewis)

In Contention I-50, Mr. Lewis asserts that the spent fuel shipping casks are unsafe. He alleges that the casks are inadequately inspected and insured, and are not properly designed to withstand fire. Both the Staff and the Applicant believe this contention is inadmissible because it is vague and is an impermissible challenge to the Commission's regulations.

10 CFR Part 71, Subpart C and Appendices A-B cover the design criteria for spent fuel shipping casks. Therefore, to the extent this contention asserts that the casks must be designed to specific site demography, it is an impermissible challenge to the regulations. See 10 CFR §2.758(a)(1981). Although Mr. Lewis makes the argument that there are unique conditions around Limerick which would render the regulations inapplicable, 10 CFR §2.758(b)(1981), he has not provided specific information on the conditions around Limerick. Thus, there is no basis for waiving the regulations.

Mr. Lewis maintains that shipment of spent fuel from Limerick is not covered by Table S-4 (Tr. 537). He is incorrect. Table S-4 is brought into the Environmental Report by 10 CFR §51.20(g)(i). Since transportation of spent fuel from the Limerick reactors falls within the scope of that paragraph, Table S-4 applies. There is no provision for site specific consideration of fuel shipments falling within the scope of §51.20(g).

For the above reasons, this contention is not admitted.

I-51 (Lewis)

This proposed contention asserts that Limerick does not meet the General Design Requirements of 10 CFR Part 50, Appendix A (General Design Criteria for Nuclear Power Plants), "because the Mark II containment design . . . would be breached if about 10% of the fuel cladding reacted to produce hydrogen."

The Applicant states that this contention has no applicability to Limerick since it ignores the fact that Limerick will be inerted.

The Commission published as a Final Rule, effective January 4, 1982, Interim Requirements Related to Hydrogen Control, 46 Fed. Reg. 58484 (1981), which amended 10 CFR §50.44 on standards for combustible gas control systems in light-water cooled power reactors. In issuing this amend-

ment, the Commission stated that it will be considering further modification of §50.44 during the long-term rulemaking effort relative to consideration of degraded or melted cores in safety regulation. Part of this long-term rule-making will involve a thorough reevaluation of hydrogen generation and control. The status of this long term effort is not known, but in any event does not affect our ruling on this proposed contention at this time.

As applied to Limerick, §50.44(c)(3)(i) requires that effective six months after initial criticality, an inerted atmosphere shall be provided for each boiling light-water nuclear power reactor with a Mark I or Mark II type containment. Also, §50.44(c)(3)(iii) requires (for Limerick) that by the end of the first scheduled outage beginning after July 1, 1982 and of sufficient duration to permit required modification, each light water nuclear power reactor shall be provided with high point vents for the reactor coolant system, for the reactor vessel head, and for other systems required to maintain adequate core cooling if the accumulation of non-condensable gasses would cause loss of function of these systems.

The Staff would have admitted this proposed contention, but that position was taken prior to issuance of the amendment to §50.44 discussed above.

We find the basis for this contention removed by the recent requirements of the rule, noted above. Therefore, the contention is not admitted.

I-52 (Lewis)

This proposed contention asserts that the design of Limerick threatens the health and safety of the public because of the seismic separation gaps that have been found at Limerick. In his response to PECO and NRC Answers, Mr. Lewis states that he believes that this is one more example of poor quality assurance and that the contention should be considered a part of Contention VI-1.

Discussion of this contention at the prehearing conference revealed that what is referred to as seismic separation gaps are spatial gaps between structures to decouple one from another when ground motion takes place.

To better understand the basis for this proposed contention, the Board provided Mr. Lewis the opportunity to file by January 15, 1982 a portion of the correspondence he relies on for the basis for this proposed contention. (Tr. 547-48.) Mr. Lewis has failed to make such a filing.

Both the Applicant and the Staff believe this proposed contention to be inadmissible.

The Board finds this proposed contention without basis and specificity and rejects it.

I-53 (FOE)

This proposed contention states in its entirety: "The generic issue of fuel cladding has not been resolved at Limerick. An accident is waiting to happen."

At the prehearing conference the representative for FOE, Mr. Anthony, stated that he was asserting that zircaloy is an unacceptable cladding for nuclear fuel in commercial nuclear power plants. Given an opportunity to state what additional basis he might have (in addition to a single article in *The Ecologist*), Mr. Anthony said that he did not have any further technical references and that he did not have any technical background to enter into a dialog on this subject (Tr. 552).

While the Staff would admit this proposed contention, the Board finds it to lack specificity and basis and rejects it.

I-54 (FOE)

This proposed contention asserts that the FSAR is incomplete without a summary of operating experience with GE reactors. This would include the malfunctioning of equipment and all causes of reactor tripping and the failure or breakdown of any equipment under operating conditions.

The Board recognizes the value of knowledge of operating experience to the Staff, the Applicant and his contractors, this Board and to the public. The Board noted (Tr. 561, 562) that several systems are in place for collecting and disseminating this kind of information. These include, but are not limited to, the NRC Licensee Event Reports, the Nuclear Plant Reliability Data System, reports and notices of the NRC Office of Inspection and Enforcement and Reports of the NRC Office of Analysis and Evaluation of Operational Data, which is independent of other NRC offices.

We are particularly interested in reviewing, at the appropriate time, the means by which the Applicant will avail himself of, and use, this information, on a current basis, when and if the LGS goes into operation. Use of such information in this design and construction of the LGS should already have taken place. We find no basis, however, for a requirement that the voluminous record of all plant operating experience of GE reactors be included in the Limerick FSAR.

The Staff agreed (Tr. 554) with the Applicant that this proposed contention is vague and nonspecific in that it contains no authority that such information is required pursuant to regulations and, furthermore, no showing of any particular value to the Board in this proceeding. Nevertheless, the Staff would admit this contention.

The Board finds this proposed contention to be vague, nonspecific and with no basis. It is rejected.

I-55 (LEA)

This proposed contention asserts that design changes are necessary to reduce the unreliability of the BWR scram system at Limerick and the associated risk to the health and safety of the public.

Applicant asserts that this is a matter of the NRC presently developing its new requirements and that there is no indication that Limerick cannot meet these requirements. The Staff finds this proposed contention admissible.

On April 30, 1981 the NRC requested plant-specific information regarding integrity of BWR scram system piping — specifically, an evaluation of the applicability to Limerick of GE's generic evaluation of the problem illustrated by the Brown's Ferry incident, an evaluation of Limerick's conformance with certain general design criteria and regulations, and a demonstration that a break in Limerick's scram discharge volume system meets 10 CFR §50.46.

This proposed contention is conditionally admitted at this stage of the proceeding, subject to the development of specific contentions and their bases, following Applicant's response to the April 30, 1981 request by NRC. *See also* proposed contention I-56.

I-56 (Lewis)

This proposed contention asserts that the design of the Limerick nuclear power plants is not adequate to protect the health and safety of the public. As basis, Mr. Lewis quotes from NUREG-0785, Safety Concerns Associated with Pipe Breaks in the BWE Scram Discharge System.

As noted above, in I-55, additional information is to be provided by the Applicant to the Staff with respect to the Limerick design and performance of the scram discharge volume system. The Board directs that proposed contention I-56 be combined with proposed contention I-55, to the extent that specific contentions and their bases are developed upon the availability of the additional information.

I-57 (Lewis)

This proposed contention asserts that there is an insufficient inventory of water on-site or in the borated water storage system to provide adequate assurance of cooling in the case of a scram discharge volume pipe break.

The Staff pointed out at the prehearing conference that Mr. Lewis apparently is confused between sources of water used for condenser cooling and the sources used for emergency core cooling, and additionally he is mistaken in his belief that the water from the spray pond would have to be borated before use for core cooling.

Makeup water that is used to maintain the inventory in the reactor vessel is not borated. Normal reactor coolant, suppression pool water and condensate storage water, which supply makeup to the reactor vessel inventory, are all non-borated. Normal condenser cooling water is non-borated and is drawn from this spray pond, which has a water volume adequate for thirty days of cooling under design basis conditions.

Only the standby liquid control system contains borated water. This system is a backup reactivity control system that is used to shut down and to maintain the reactor shutdown when sufficient control rods fail to insert.

The Board finds this contention to be without basis and rejects it.

I-58 and I-60 - Site Related Compensating Engineering Safeguards⁵² (CEPA, Keystone, LEA)

In contention I-58 Keystone and CEPA assert that the population density in the vicinity of Limerick exceeds the standards currently recommended by the NRC for siting of nuclear plants. Therefore Limerick should not be granted an operating license.

The Applicant observes, in its Answer (December 7, 1981) that there is no specification as to what these alleged standards are or how they apply to Limerick at the operating license stage, and further, that Section 108(b) of the NRC Appropriations Act of 1980, Public Law 96-295, 94 Stat. 783 (June 30, 1980), requires that only construction permit applications filed after October 1, 1979 meet demographic criteria to be established by the NRC, which clearly does not apply to Limerick. The Staff would admit I-58, although the Staff states that the siting standards (criteria) that would apply to the Limerick plant at the operating license stage would be 10 CFR Part 100.

In contention I-60, LEA is concerned about the health effects of radioactive releases as a result of both normal reactor operation, including anticipated operational occurrences, as well as accidents. In this contention, LEA alleges that the Applicant has not provided adequate means to control gas and liquid radioactive effluent as required by 10 CFR Part 50,

⁵² The terms "engineering safeguards" or "engineered safeguards" are taken to mean what are now referred to as "engineered safety features."

Appendix A, General Design Criterion 60 and 10 CFR §100.10. LEA cites the large population density and the power level of the reactor as bases for an unfavorable site description and contends that additional engineering safeguards such as filtered vented containment, molten core retention devices, ground water interdiction measures and other compensating engineering safeguards should be required.

Applicant argues that the facility, as proposed, meets all current requirements and since no specific deficiency in the design of the present system is alleged contention I-60 should not be admitted. Applicant further states that the engineering safeguards required by 10 CFR §100.10 are described throughout the application. In response to a criticism that the contention lacked specificity, LEA responded that the contention could be made more specific after the results of the PRA are looked at.

As regards contention I-58, as stated, the contention must be denied. As pointed out by Applicant, the criteria referred to by intervenors do not apply to Limerick. The contention does however raise the issue of the population density surrounding the Limerick Station and that issue, based upon the results of the PRA, could lead to possible requirements for site-related compensating engineering safety features.

The Board admits both of these contentions conditionally with the requirement that further specification of deficiencies in light of the proposed design and population density be made based on the results of the PRA. Depending on the final specification of these contentions, the Board notes the possibility of future conflict with Commission rulemaking related to requirements for additional compensating engineered safety features such as filtered, vented containment.

I-59 (LEA)

This proposed contention alleges that the NRC currently has no technical justification for setting the "design basis accident." It asserts that probabilities of accidents are not known and thus there is no rational basis for deciding what the design basis should be, and that until the NRC can justify its choice of the design basis, there is no rational method for finding that a nuclear power plant does not represent an undue risk to the health and safety of the public. Therefore, the contention maintains, the Limerick operating license should be denied. LEA's basis is solely a reference to "NRC Staff testimony in TMI-1 Restart proceedings."

The Staff believes that this proposed contention is inadmissible because it is not focused on the selection of design basis accidents for Limerick. Rather, in the Staff's view it raises what LEA believes to be a generic inadequacy with the NRC Staff's basis for selection of design basis

accidents, and to be admissible, the contention must establish a nexus between this generic issue and the licensing of the Limerick units. LEA would be required to specify why the establishment of design basis accidents for this facility is lacking in justification.

In fact, there is no definitive set of design basis accidents used by the NRC for a "choice of the design basis." In Regulatory Guide 1.70, Standard Format and Content of Safety Analysis Report for Nuclear Power Plants, Chapter 15, Accident Analysis, the Staff provides guidance to an applicant for his evaluation of the safety of a nuclear power plant, which should include analyses of the response of the plant to postulated disturbances in process variables and to postulated malfunctions or failures of equipment. Such safety analyses provide a significant contribution to the selection of limiting conditions for operation, limiting safety system settings, and design specifications for components and systems from the standpoint of public health and safety. These analyses are a focal point of the Commission's construction permit and operating license reviews of plants. The analyses should include an assessment of the consequences of an assumed fission product release that would result in potential hazards not exceeded by those from any accident considered credible. The Guide proceeds to give additional guidance on transient and accident classification and evaluation and provides a Table of Representation Initiating Events to be Analyzed. This practice has been utilized for approximately ten years.

Considerable testimony by the Staff was provided in the TMI-1 Restart Hearings concerning the Staff's methods for deciding which events are design basis. The TMI-1 Restart Board concluded that "though they [the methods] do depart from the ideal, they are by no means irrational." *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 1), LBP-81-59, 14 NRC 1211, 1383 (1981). We, of course, do not have such a record before us, as applied to Limerick.

The Applicant argues that this matter was raised at the construction permit stage.⁵³ The Board in that proceeding decided against the intervenor (also LEA). Applicant argues that this matter is barred by the principle of *res judicata* and should be dismissed.

⁵³ The contentions raised at that time were:

- A. The Applicant has failed to establish that the design basis accidents presented in the PSAR are the "worst" accidents.
- B. The assumptions concerning the reliability of the engineered safeguards and the quantities of radioactive products released in the design basis accidents were not sufficiently analyzed and justified in the PSAR and are insufficiently set forth to meet the applicant's burden of proof to establish the safety of the plant.

The Board finds that the instant contention is not precisely the same as the two part contention raised at the construction permit stage. Further, there have been significant new developments bearing on the proper approach to systems safety evaluation since the CP decision, including new emphasis on PRA and system interaction analysis techniques and failure modes effects analyses. Therefore, the contention is not barred by collateral estoppel.

This contention is not a very clear indication of what LEA wants to litigate. However, we can discern that LEA is asserting that the methodology used by the Staff (and presumably the Applicant) in deciding which spectrum of accidents to design against is not rationally based nor technically justified and is therefore inadequate to provide reasonable assurance that the design criteria of the regulations have been met.

So construed, the contention is conditionally admissible. It can and should be better specified after the Applicant's and Staff's method of review of the accident design of the Limerick plant is disclosed by the further progress of those reviews, including possible application of the review of the PRA. When specified, the contention should make clear the defects alleged in the methodology, the regulations which therefore may not be met, and the changes or improvements which LEA alleges should be made in the accident design analyses.

I-61 (LEA)

In this contention, LEA asserts that the Applicant's Fire Protection plan does not meet General Design Criteria 3 on Fire Protection. LEA and the Applicant agree that the Applicant is reviewing the new requirements for fire protection. Applicant plans to supplement its application with the results of its new fire protection evaluation. Since this contention essentially alleges a lack of information, we admit it conditionally, subject to its being made more specific after the Applicant's new evaluation is filed.

I-62 (Lewis)

This proposed contention asserts that the Limerick nuclear power plant can suffer a major breach of containment due to a pressurized thermal shock.

The Applicant argues in his Answer that NRC Bulletin 81-06, a letter from Darrell Eisenhut to licensees dated May 8, 1981, excludes BWR's from that (pressurized thermal shock) consideration. The mere absence of any reference to BWR's in the title or body of this Bulletin does not, in the view of the Board, necessarily imply that pressurized thermal shock

might not be a problem for the Limerick BWR reactors. The staff does not object to this contention.

The Board admits this contention.

I-63 (LEA)

LEA contends that the source of cooling water for Limerick has not yet been established. As basis for the contention LEA raises the issues of attitude in Plumstead township, and the question as to whether the Point Pleasant diversion will in fact take place. Applicant argues that the cooling water sources are defined and identified and there are no insurmountable obstacles of any kind that would affect obtaining cooling water for Limerick, further arguing that the Commission recognizes that "it should not sit back and wait until every other agency which might have something to do with the problem completes its work before it goes forward." Tr. 528. Although the Staff originally did not oppose this contention, it changed its position and now opposes its admission, basing its position change on LEA's explanation in the context of a safety contention. Considered as a safety issue, the Staff sees no basis for this contention. The Board, while agreeing that there is some uncertainty related to design details of the cooling water transmission system as an environmental issue, finds that it is entirely too speculative to assume that Applicant's planned sources for cooling water sufficient for safety will not materialize. When and if those sources are denied, the plant would not be allowed to operate. If changes in sources are required, the issue could then be ripe for consideration depending on the circumstances. The contention is denied.

D. Group II Contentions

II-1 (CEPA, Keystone)

Intervenors assert in this contention that Limerick's generating power is not needed and that there are superior alternatives to Limerick for generating power which is needed. Since the Special Prehearing Conference was held, the Commission has published a final rule on the issue of need for power which specifically 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." 47 Fed. Reg. 12940 (1982) (to be codified at 10 CFR §51.53(c)).

A contention concerning need for power can only be admitted if a petition for the new rule to be waived in the current proceeding is made and accepted pursuant to 10 CFR §2.758(a)-(d) (1981). This would

require a showing that special circumstances exist in this proceeding such that application of the regulation would not serve the purpose for which the regulation was adopted. We do not believe that such a showing has been made at present. We note, however, that at the Prehearing Conference considerable attention was focused on the proceeding before the Pennsylvania Public Utilities Commission. Tr. 132-146. If the parties believe after the completion of that proceeding that they can make the required prima facie showing under section 2.758(b), they may, of course, file the appropriate petition. For the present, however, this contention is denied.

E. Group III Contentions

III-1 (CEPA, Keystone)

Contention III-1 asserts that the Applicant has not shown that it meets the financial qualifications requirements of 10 CFR §50.33(f). Since the Special Prehearing Conference, the Commission has adopted a rule which amends §50.33(f) to eliminate financial review from operating license proceedings. *See* Elimination of Review of Financial Qualifications of Electric Utilities in Licensing Hearings for Nuclear Power Plants, 47 Fed. Reg. 13750 (1982). The rule may be waived only upon a showing of special circumstances pursuant to 10 CFR §2.758 (1981). At present, no such showing has been made. This contention is, therefore, not admitted.

III-2 (Shniper)

This contention appears to assert that the Applicant does not have a satisfactory means of financing decommissioning of the reactors. In eliminating financial qualifications as an issue in operating licensing proceedings, the Commission also eliminated the issue of decommissioning costs. 47 Fed. Reg. 13750 (1982). Therefore, this contention is not admissible in this proceeding.

The Staff suggests that the contention also includes the issue of environmental impacts of decommissioning. The Board is unable to ascertain whether Mr. Shniper in fact desires to litigate this issue. The contention is vague. The contention itself is not differentiated from its basis. The Board is entitled to expect clearer drafting, particularly in view of our guidance in our Order of October 14, 1981 at page 3 (unpublished), on the clear and concise drafting of contentions, with an additional setting forth of supporting bases with reasonable specificity. As the contention is presented,

it is entirely too vague to put the Board and the parties on notice as to what would be litigated. For these reasons, the contention is denied.

F. Group IV Contentions

IV-1 (Lewis)

In this contention, Mr. Lewis maintains that the training of spent fuel truck drivers is not adequate to protect public health and safety. As a basis for this, he points to NUREG-0645 which, he alleges, instructs truck drivers to ignore police directions and run barricades. He admits this action would be called for only in situations where the drivers have reason to believe that the directions were not given by actual police, i.e. that the directions were a ruse. He could not cite any instance where this had occurred. (Tr. 582-83).

The Applicant argues that Mr. Lewis does not show any inability on the part of the Applicant to conform to the requirements of NRC regulations. Applicant also maintains that plans for training spent fuel pool shipment escorts may not be the subject of a hearing, such as this one, under 10 CFR Part 50. The Staff believes that the training of spent fuel pool drivers would be relevant only insofar as it affected quantification of environmental impacts of a possible accident for NEPA purposes. However, the Staff asserts that as so interpreted, the contention is a challenge to 10 CFR §51.20(g) and Table S-4 of the NRC regulations and is therefore inadmissible.

We agree that Table S-4 quantifies the environmental impacts of transporting spent fuel from the site. Questioning these environmental impacts is an impermissible attack on NRC regulations. See 10 CFR §2.758 (1981). Therefore, this contention is denied.

IV-2 (Lewis)

The contention as submitted asserts that the Applicant cannot assure enough qualified operators to run the Limerick plant safely, because past NRC operator qualification testing practices were deficient in that operators were able to and did cheat on the tests given to TMI-1 operators. At the prehearing conference, Mr. Lewis added that there is a limited pool of qualified operators and there may not be enough qualified ones available to staff Limerick. Tr. 586-87. The Board agrees that these are important, potentially serious issues. The problem is that at this stage it is pure speculation to believe that inadequacies in NRC Staff administration of the TMI-1 examinations (e.g., lack of proctoring), will be repeated at the

examinations which Limerick operators will take. *See, Metropolitan Edison Co. (TMI, Unit 1), LBP-82-34B, 15 NRC 918 (1982) (Report of Special Master)*. In addition, a minimum staffing requirement will assure that the plant will not operate unless the requisite number of operators are available. However, Mr. Lewis is now in the difficult position of not knowing what the minimum staffing will be years from now, and therefore whether he would have a basis to contend that Limerick staffing is inadequate. Further, if the procedural administration of the test is totally removed from consideration by rejection of the contention now because it is premature, any basis in fact for a concern of cheating on examinations which will be given a few years from now will not be available for Mr. Lewis to pursue on the record of the proceeding.

Accordingly, although the contention must be rejected now as premature, speculative, and without basis, we reject it without prejudice to Mr. Lewis raising the following two contentions, subject to the Section 2.714 requirements of basis and specificity, at the future appropriate times: (1) after the minimum operator staffing requirements are established for Limerick (presumably not later than the last SER supplement), a contention that they are inadequate; and (2) after the NRC Limerick operator and senior operator examinations have been given, a contention that their administration was procedurally inadequate, thereby raising a question about possible cheating on them. Not later than sixty days prior to these examinations, the NRC Staff shall file with the Board and the parties its procedural plans for administration of the examinations. After the examination, the NRC Staff shall file with the Board and the parties a report on whether the planned procedures were followed, any material variations of them, any material observations regarding the procedural conduct of the examination, a summary of the results and a discussion and conclusion as to whether enough qualified operators are available to operate the Limerick plant safely.

G. Group V Contentions Other Than Those Concerning the Supplementary Cooling Water System

V-1 (FOE)

This proposed contention asserts generally that the requirements of NEPA and the National Historic Preservation Act have not been met with regard to evaluating impacts on historical sites. Because both NEPA and the Historic Preservation Act applied at the construction permit stage and were complied with then, we require that new information since that time be shown before we will consider them currently. The statement of basis

for this contention includes a vague reference to "new information" on low level radiation. This does not inform the Board or the parties what information is being referred to and, hence, is insufficient as a basis for a contention. In addition, it is alleged that certain impacts were not considered at the construction permit stage. Such an allegation must be made with even greater specificity because of the fact that there was an opportunity to litigate the need to consider these impacts in the earlier proceeding. In addition, efforts to mitigate the effect of such impacts may be impossible once the plant is built although they would have been possible before the plant design was finalized. Thus, an allegation that the plant's effect on aquatic life and stream flow was ignored is too broad to be admissible as a contention in this operating license proceeding.

The allegation that the effect the sight of the cooling tower plume might have on visitors to particular parks was not considered is more specific. In general, we consider that this impact was encompassed in the evaluation of the visual impact of the plant which was performed at the construction permit stage. We recognize that some of the impacts, allegedly resulting from viewing the plume, however, are psychological. These would not have been considered when the construction permit was issued and if a basis had been provided, we might consider them now. However, no basis is given for the proposition that viewing the plume will cause people to become alarmed about possible radiation exposure.

As to the allegation that proper consultation was not done under the Historical Preservation Act, we find it vague. It is not clear what was allegedly done incorrectly by the Staff and Applicant. It is not even clear why the Advisory Council on Historic Preservation was "in error" in verifying that no National Register properties would be affected.

The Applicant objects to this contention. The Staff objects to all of it except as it relates to the visual impact of the plume and, perhaps, to the issue of psychological stress. The Board does not admit it.

V-3 (FOE)

In this contention, FOE alleges that the danger of fire and explosions in connection with gas and oil pipelines and industry near the plant has not been sufficiently analyzed. FOE considers this as both a safety and an environmental concern (Tr. 596). To the extent it addresses environmental concerns, this contention is not admissible because it does not attempt to provide a reasonable accident sequence which might cause environmental

harm.⁵⁴ NEPA requires consideration of only reasonably foreseeable impacts. *Environmental Defense Fund, Inc. v. Hoffman*, 566 F.2d 1060, 1067 (8th Cir. 1977); *Scientists Institute for Public Information v. AEC*, 481 F.2d 1079, 1092 (D.C. Cir. 1973).

FOE's representative indicated at the prehearing conference that he had seen nothing about his concerns in the FSAR. However, section 2.2 of the FSAR does, indeed, discuss possible fires or explosions. It covers industries, railroads and pipelines. It does not appear that the possibility of fires at the Firestone and Structural Foam industries or the possibility of an explosion at Structural Foam are explicitly considered, but it is not clear that FOE alleges that such events pose a hazard other than in connection with an oil or gas pipeline fire or explosion. Therefore, this contention is denied at present as being without basis.

Our finding that the contention lacks basis indicates only that the FSAR does include this matter, contrary to the representations of FOE. It does not reflect a judgment on the adequacy of the discussion in the FSAR. If it so desires, FOE may, within 30 days of the service of this order, file contentions which allege specific deficiencies which FOE believes exist in the FSAR analysis of these matters. Should FOE elect to make such a filing, the Staff and the Applicant shall reply to it.

V-4 (AWPP)

Intervenor asserts that Applicant has improperly averaged temperature data in evaluating the meteorological effects of the cooling tower plume and by doing so has not adequately studied the potential for air crashes resulting from turbulence created by cooling tower discharge, changes of Visual Flight Rule conditions and carburetor icing potential. Staff argues that the contention is without basis in that temperatures are not averaged in the calculation of plume effects. Staff states that all tower plume dimensions, plume rise and effects, airport operations effects, fog, icing, cloud modification, precipitation modification and humidity changes were based on a total of 237 separate soundings taken in a one-year period from November 1974 through October 1975. Staff further states that a separate computer run was made from each sounding and the results were not averaged. Because the contention is erroneously based upon the premise of

⁵⁴ Seemingly, FOE is alleging an accident sequence which involves high flood waters causing damage to the roadbed of a nearby rail line. This, in turn would cause a derailment which would cause a fire and, when the fire reaches oil and gas pipelines or a particular industry, an explosion would result which would lead to a release of radioactivity from the plant.

the alleged use of average temperature to calculate plume characteristics, the Staff recommends denial of this contention.

Applicant states the contention is incomprehensible, that nothing is alleged to show any releases from the cooling tower would affect "changes in Visual Flight Rule conditions" as alleged, and no basis is provided for the allegation that "cooling tower turbulence" might in some way increase the potential for air crashes.

Under questioning the Intervenor could provide no specific instances of air traffic problems associated with cooling towers. (Tr. 599-604.)

The only aspect of this contention for which the thread of a basis was provided relates to the potential for carburetor icing in the "invisible" plume. (Tr. 602-604.) The contention as stated is denied.

The Board accepts this contention as stated below:

Neither Applicant nor Staff have considered the potential for and import of carburetor icing of aircraft flying into the Limerick cooling tower plume(s).

V-5 (AWPP)

Intervenor asserts that releases of radionuclides during both normal operation and under abnormal and accident conditions will cause adverse health effects for himself, his family and members of AWPP.

The Applicant maintains that this is an illegal challenge to 10 CFR Part 50, Appendix I. The Commission has held, however, that health effects associated with routine radioactive emissions from a nuclear power plant in compliance with Appendix I may be litigated in licensing proceedings. *Public Service Co.* (Black Fox Station, Units 1 & 2), CLI-80-31, 12 NRC 264, 277 (1980). The Commission added that it believes that unnecessary adjudication should be avoided. *Id.* at 277.

The Staff states that with exception of the matters as to which there is insufficient basis, the contention should be admitted.

Intervenor's basis, insofar as it applies to health effects of releases of radionuclides, challenges the use of calculated annual releases as opposed to "the highest concentration of radioactive release." Intervenor misconstrues the purpose of Appendix I. Its purpose is to provide design objectives to meet the "As Low As Reasonably Achievable" (ALARA) criterion. Further, it specifies that if actual releases during any calendar quarter are such that radiation exposure, calculated on the same basis as the design objective exposure would exceed one-half this design objective annual exposure, corrective action is required.

Finally, Intervenor's example, to support his assertion that "The body is not affected by average annual releases but by the highest concentration of

radioactive release," is meaningless. Any radiation dose affects the body, whether absorbed in a short term or a long term. Specifically, if "2 units is the maximum permitted annual dose," "12 units of radioactivity [sic]" given off in three months has no logical relationship to dose. If Intervenor meant 12 units of dose were received in 3 months, the permitted annual dose already would have been exceeded. Again, Appendix I would not be the controlling regulation here. Technical specification on release rates and 10 CFR Part 20 limits on allowable dose would be controlling.

We find no basis for this contention and accordingly it is not admitted.

V-7 (CEPA)

In this contention, CEPA asserts that no operating license should be issued for Limerick until a plan is developed for the ultimate disposal of spent nuclear fuel. As we noted above, *see* page 1455, *supra*, this contention is essentially the same as ECNP's waste confidence contention. For the reasons discussed in connection with ECNP's contention, this contention is not admitted.

V-8 (Lochstet)

In this contention, Dr. Lochstet seeks to address the environmental and health consequences of radon emissions related to the nuclear fuel cycle. As discussed above, *see* pages 1447-1452, *supra*, Dr. Lochstet does not have standing as of right. Nor did we find that he should be granted discretionary intervention on this issue. The contention is denied.

V-9 (Lochstet)

In contention V-9, Dr. Lochstet maintains that the environmental and health impacts of the Iodine-129 created in connection with operation of the Limerick plants have not been adequately evaluated. As we found above, *supra* pages 1447-1452, Dr. Lochstet does not have standing as of right and does not merit discretionary intervention on this issue. This contention is, therefore, not admitted.

V-10 (Shniper)

In this contention, Mr. Shniper alleges that the Applicant's environmental report is in error in stating that there are no fossils on the Limerick site for which special provisions must be made. Mr. Shniper refers to a

newspaper article reporting that fossils have been found on the site. He asks the Board "to require applicant to submit a plan concerning what steps applicants propose to take to further explore the paleontological [sic] find, to arrange that further construction not interfere with or destroy any paleontological [sic] evidence."

The remedy sought by Mr. Shniper makes it apparent that he is concerned with the impact which construction may have on the fossils. As we discussed in connection with the supplementary cooling water system, impacts of construction are outside the jurisdiction of this Board. See pages 1476-1481, *supra*.

It is not clear what is intended as the contention, as opposed to the basis. It is also not clear what relief is being sought by Mr. Shniper. The contention lacks the specificity required under Section 2.714 and for that reason and others listed above, this contention is denied.

H. Group VI Contentions.

VI-1 (AWPP, Lewis)

The proposed contention asserts that the Applicant has failed to establish and carry out an adequate quality assurance program as required by Appendix B of 10 CFR Part 50. Further, Intervenor's assert that this is shown by a pattern of careless workmanship, departure from specified procedures, together with faulty inspection and supervision in the construction of Units 1 and 2 of the Limerick Generating Station. Certain specific infractions are cited and a list of correspondence concerning these matters is provided. (The assertion that Applicant has failed to comprehensively monitor the effects of quarry blasting as it relates to effects on concrete setting, concrete integrity in structures, and changes in sub-rock fractures, is rejected, as part of this proposed contention, as being without basis).

The Applicant believes this contention should be denied because: it is merely a generalized attack on Applicant's quality assurance program during the construction phase; the only basis provided is a list of old correspondence; there is no demonstration that the Applicant's resolution and disposition of any matter raised has been less than completely satisfactory; and there is no showing as to how any of the enumerated generalized subject areas "increases the risk of an accident."

The Staff finds the proposed contention admissible, except for the part relating to monitoring of the effects of quarry blasting.

The Board, in consideration of this proposed contention, is mindful of its responsibility to find, as one basis for approving an operating license for Limerick, that the facility has been constructed "in conformity with the

construction permit and the application as amended, and the provisions of the Act, and the rules and regulations of the Commission," and can and will be operated in compliance with "the application as amended, the provisions of the Act, and the rules and regulations of the Commission," 10 CFR §50.57. The effectiveness of the Quality Assurance program is an essential ingredient in determining both the adequacy of construction and the ability to safely operate the facility. Although the proposed contention could be made more specific with better articulated bases, nevertheless, the importance of the subject leads us to admit this proposed contention at this early stage of the proceeding, subject to the development of specific contentions and their bases regarding Applicant's alleged construction QA deficiencies and the import of this for the proper construction of the plant and for the ability of Applicant to implement a proper operational QA program.

I. Group VII Contentions

VII-1 (Guild)

In contention VII-1, the Guild alleges that the Applicant will take measures likely to infringe upon the civil liberties of the public in order to provide security for the plants. We found above, *see* page 1446, *supra*, that the Guild does not have standing to assert this contention in this proceeding. This contention, therefore, is not admitted.

VII-2 (FOE)

In this contention, FOE maintains that granting operating licenses to the Limerick facilities will be a denial of due process to nearby residents. Clearly, procedural due process has not been denied these individuals since they have been given notice and an opportunity for a full adjudicatory hearing before the licenses could be granted. Furthermore, although FOE alleges that NRC is not complying with procedures required by NEPA, no specific inadequacy is mentioned.

FOE, however, refers to the concept of substantive due process. The gist of FOE's substantive due process claim is that PECO has not given residents information on risks and alternatives to the plant. Much of this information is contained in the Applicant's applications for construction permits and operating licenses. In any case, only the government, not PECO, can be guilty of violating the Constitution by taking lives or property without due process. U.S. Const. amend. 5.

Moreover, while it is true that in *Meyer v. Nebraska*, 262 U.S. 390 (1933), the Court held unconstitutional a state law preventing the teaching of German because it deprived citizens of the right to learn the German language, the case is not analogous to the present one. No statute or governmental body is depriving citizens of access to information in the present situation. Rather, what is sought is apparently an affirmative responsibility to provide information. No such constitutional right is established in *Meyer*.

If the contention is intended to encompass any other substantive due process claim, that claim is not clearly stated. It does not appear that the statute is being challenged as lacking rational basis. Moreover, it is not clear that this Board has jurisdiction to decide whether the Atomic Energy Act as written denies due process to those living near nuclear plants.

For the above reasons, this contention is not admitted.

J. Emergency Planning (Group VIII) Contentions

There are 31 emergency planning contentions advanced in this proceeding, numbered VIII-1 through 31. One or more of the contentions, with one exception noted below, are advanced by Intervenor LEA, Keystone, CEPA, White or Lewis. The Applicant in general believes these contentions are premature since emergency plans by the Applicant and by responsible government agencies have not been proposed in response to the newer emergency planning requirements of 10 CFR §50.47 and Appendix E to Part 50. In addition, some of the contentions may challenge the emergency planning regulations regarding the size of the emergency planning zones (EPZ). However, it is premature in the Board's view to determine whether, because of some limited flexibility in designating the EPZ, due to certain factors, is permitted by the regulations, 10 CFR §50.47(c)(2), a specific enlargement of the EPZ is required.

The Board finds that emergency planning contentions should be deferred until the emergency plans are available. Depending upon the schedule, it may be useful to establish separate schedules for the filing of contentions based on Applicant's emergency plan, and the filing of contentions based on the local and state government emergency plans. Intervenor LEA, Keystone, CEPA, White and Lewis shall file a coordinated listing of emergency planning contentions when that time is established. Intervenor shall designate a lead intervenor to coordinate emergency planning matters (including discovery and notifications of meetings), and inform the Board and the parties of that designation within sixty days from the date of this Order. It would appear premature to consider any discovery on emergency planning other than informal discussions, and the service on all parties of

all correspondence and documents regarding emergency planning among the Applicant, NRC Staff, the Commonwealth of Pennsylvania, FEMA, and other responsible government agencies. The extent to which the Staff, the Commonwealth, FEMA and the Applicant involve the Intervenors in informal briefings on the status of emergency planning may affect greatly the need for formal discovery and the need to litigate many matters as formal contentions.

The exception alluded to above is that the Graterford Prisoners have advanced an emergency planning contention, VIII-10, alleging inadequate plans to evacuate prisoners at Graterford Prison which is within the ten-mile EPZ. As discussed in the context of the standing of the prisoners, this contention is a separable special interest. Accordingly, the prisoners' participation, through their counsel the National Lawyers Guild, will be limited to this contention. The contention is conditionally admitted, and therefore must be respecified after offsite emergency plans for the Graterford Prison are made available. The prisoners may participate in this issue through the prehearing and hearing stages, without the need to coordinate through the lead emergency planning Intervenor.

V. DISCOVERY

Informal discovery, which includes no involvement or requests for involvement of the Board, shall begin immediately and continue through September 30, 1982. By October 11, 1982, the parties shall jointly file their views on whether informal discovery should continue, or whether discovery involving formal interrogatories, depositions and/or requests for documents should begin on some or all issues. Any Intervenor who wishes to have input in the joint recommendation shall inform counsel for LEA, the Staff and Applicant in writing of its views by September 30, 1982. The October 11, 1982 joint report shall be agreed upon by LEA, the Staff and Applicant. The report should include a summary of the extent and subjects of the informal discovery which was conducted. Problems in and recommendations for improvement of the discovery process should be highlighted.

Informal discovery, in the context intended through the end of September 1982, includes meetings, telephone discussions, furnishing of existing documents, and confirming information in writing as a followup to discussions. The parties are not precluded from more formal written interrogatories or depositions, where both the requesting and answering parties agree it would be productive. However, no motions to compel discovery

may be filed with the Board until after our action in light of the October 11 report.

In addition to the lead Intervenors required for the subjects of PRA and emergency planning, Intervenors should consider designating lead intervenors in subject areas comprising the other contentions as soon as possible to facilitate discovery. In any event, where there are multiple intervenors sponsoring the same contentions only one of them shall be the lead intervenor to coordinate matters related to the contention. If the parties do not resolve coordination among themselves, the Board will consider taking further action, perhaps in the same time-frame as a prehearing conference to consider all pending matters next fall.

If Del-Aware, the Staff and the Applicant believe more formal discovery must be instituted on a separate prompt schedule with respect to Del-Aware's issues which may be affected by construction, they should attempt to agree on such a schedule. If necessary, a ruling from the Board may be requested.

VI. RECONSIDERATION AND APPEAL

Pursuant to 10 CFR §2.751a(d), parties normally may file objections (requests for reconsideration) to this Order with the Licensing Board within five days after service (ten days in the case of the Staff) of the Order. Parties may not file replies to the objections unless the Board so directs. Due to the length of this Order, the Board extends the time under §2.751a(d) to within ten days of the service, and twenty days in the case of the Staff.

Pursuant to 10 CFR §2.714a, within ten days after service of this Order, a party may file a motion of appeal and supporting brief before the Atomic Safety and Licensing Appeal Board. Any other party may file a brief in support of or in opposition to the appeal within ten days after service of the appeal.

Appeals permitted under §2.714a are limited as follows: Petitioners for leave to intervene may only appeal an order wholly denying intervention on the question of whether intervention should have been permitted in whole or in part. An order granting a petition for leave to intervene is appealable

by a party other than the Intervenor on the question of whether the petition should have been wholly denied.

**ATOMIC SAFETY AND
LICENSING BOARD**

**Lawrence Brenner, Chairman
ADMINISTRATIVE JUDGE**

**Dr. Richard F. Cole
ADMINISTRATIVE JUDGE**

**Dr. Peter A. Morris
ADMINISTRATIVE JUDGE**

Bethesda, Maryland
June 1, 1982

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**John H Frye, III, Chairman
Dr. Emmeth A. Luebke
Dr. Oscar H. Paris**

In the Matter of

**Docket No. 50-142 OL
(Proposed Renewal of
Facility License)**

**THE REGENTS OF THE
UNIVERSITY OF CALIFORNIA
(UCLA Research Reactor)**

June 4, 1982

Without objection, Licensing Board admits the City of Santa Monica as a participant pursuant to 10 CFR §2.715(c).

RULES OF PRACTICE: PARTICIPATION UNDER 10 CFR §2.715(c)

Participants in NRC adjudications under §2.715(c) are entitled to discovery.

RULES OF PRACTICE: PARTICIPATION UNDER 10 CFR §2.715(c)

Participants in NRC adjudications under §2.715(c) who are admitted after the time for filing petitions to intervene under §2.714 must take the proceeding as they find it.

MEMORANDUM AND ORDER

(Admitting the City of Santa Monica Under 10 CFR § 2.715(c))

On May 6, 1982, the City of Santa Monica filed a "Notice of Intent to Participate as an Interested Municipality" in this proceeding. No party opposes Santa Monica's participation under the provisions of 10 CFR §

2.715(c); however, dispute does exist regarding the scope of Santa Monica's participation.

Both UCLA and Staff take the position that participants under § 2.715(c) are not entitled to discovery. This position is based on the wording of that section:

(c) The presiding officer will 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 to the issue. Such participants may also file proposed findings and exceptions pursuant to §§2.754 and 2.762 and petitions for review by the Commission pursuant to §2.786. The presiding officer may require such representative to indicate with reasonable specificity, in advance of the hearing, the subject matters on which he desires to participate.

Because discovery is not specifically mentioned in §2.715(c), UCLA and Staff argue that Santa Monica is not entitled to discovery. CBG takes sharp issue with this position, and Santa Monica has asked to be afforded an opportunity to respond should we consider the argument.

UCLA and Staff ignore a long history of affording full procedural rights to interested state and local governments who choose to participate under §2.715(c). This provision has consistently been regarded as relieving these governments from the burdens of §2.714, but at the same time permitting them to participate as if they were admitted under the latter provision if they so choose.

Section 274(1) of the Atomic Energy Act (42 USC 2021(1)) requires that the Commission afford an opportunity to the state which will be the situs of the licensed activity to ". . . offer evidence, interrogate witnesses, and advise the Commission as to the application . . ." In §2.715(c), the Commission has extended this opportunity to interested local governments as well.

In contrast, §189 of the Atomic Energy Act (42 USC 2239) requires that the Commission grant a hearing upon request of an interested person with respect to certain applications. Section 2.714 implements this directive.

It seems to us anomalous that the Staff should urge that the specific directive of §274(1) that states be permitted to "offer evidence, interrogate witnesses and advise the Commission" somehow offers fewer procedural

rights than §189.* Rather, we believe Congress clearly intended to insure that certain minimal procedural rights were afforded states, rights which it did not specifically enumerate in §189. Consequently we read these sections of the Act and the Regulations as placing fewer procedural burdens on interested state and local governments while at the same time permitting full procedural rights. Congress simply did not intend that states taking advantage of §274(1) of the Act should somehow be less favored than their citizens participating under §189.

This interpretation is consistent with Commission precedent. The Commission has stated: "... the participation of an interested sovereign state in our licensing process, as a full party or otherwise, is always desirable" The Appeal Board, prior to the amendment of §2.715(c) expressly granting the right to appeal, has read §274(1) as affording a state a right to appeal an adverse initial decision in the face of an applicant's challenge (*Gulf States Utilities Company*, [River Bend Station, Units 1 and 2] ALAB-317, 3 NRC 175 [1976]). We hold that the "... right to offer evidence, interrogate witnesses, and advise the Commission . . ." afforded by §274(1) encompasses the right to conduct discovery in adjudicatory proceedings. Because the Commission has extended these rights to interested local governments in §2.715(c), Santa Monica may take advantage of them.

Nonetheless, Santa Monica must take the proceeding as it finds it. It will not be permitted to go over ground already covered by the extensive discovery which has already taken place in this proceeding. Further, in accord with *Gulf States Utilities Company*, (River Bend Station, Units 1 and 2) ALAB-444, 6 NRC 760, 768-9 (1977) and §2.715(c), Santa Monica will be required to specify the issues on which it intends to participate.

In consideration of the foregoing, it is this 4th day of June, 1982,

ORDERED

1. Santa Monica is admitted to this proceeding pursuant to 10 CFR §2.715(c);
2. Objections to Santa Monica's participation in future discovery are overruled;
3. Santa Monica may not, absent a substantial showing of good cause, engage in discovery with respect to subjects on which that process is completed; and

* Members of this Board are sitting on other cases in which interested states are engaging in discovery without objection from Staff Counsel.

4. Within ten days of the date of service of this ORDER, Santa Monica is to state with specificity the subjects on which it intends to participate.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

**Emmeth A. Luebke
ADMINISTRATIVE JUDGE**

**Oscar H. Paris
ADMINISTRATIVE JUDGE**

**John H Frye, III
ADMINISTRATIVE JUDGE**

**Bethesda, Maryland
June 4, 1982**

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
(Operating License
Proceeding)

ARIZONA PUBLIC SERVICE
COMPANY, et al.
(Palo Verde Nuclear
Generating Station, Units 1,
2 and 3)

June 4, 1982

The Licensing Board denies the Intervenor's motion of May 14, 1982, asking the Board to reconsider its ruling of April 27, 1982, as to the inadmissibility of the effects of the pending Federal District Court suit filed by the Pima-Maricopa Indian Community on the Applicants' source of water and the legality of Applicants' contract for effluent.

NEPA: AGENCY RESPONSIBILITIES

The ruling of the D.C. Circuit in *Natural Resources Defense Council v. NRC*, No. 74-1586 (D.C. Cir. April 27, 1982), does not require the Licensing Board to consider, in its NEPA balancing, legal uncertainties which may in the future produce environmental effects.

MEMORANDUM AND ORDER

On April 27, 1982, this Atomic Safety and Licensing Board made an oral ruling denying 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 and the Secretary of the Interior. Tr. 346. The Board also declined to examine the validity of the Applicants' contract with City of Phoenix and the other cities for the purchase of effluent. *Id.* On May 14, 1982, Counsel for the Intervenor filed a motion asking the Board to reconsider its ruling. Following oral arguments on May 25, 1982 (Tr. 985-1012), the Board on May 26, 1982, made a brief oral ruling confirming the conclusions reached in its earlier decision and indicating that this written order would follow. Tr. 1269.

I. The Validity of the Contract

On March 17, 1982, the Board issued a Memorandum and Order which among other things denied the Joint Applicants' motion for summary disposition of Contention 5. The Board indicated in that Order that it had received a letter from Mr. Bill Stephens, Executive Director of the Arizona Municipal Water Users Association, which advised the Board that Agreement No. 13904, pursuant to which effluent will be supplied to Joint Applicants for cooling purposes at Palo Verde, was being renegotiated. The Board considered the issue of the provisions of this agreement to be within the scope of Contention 5, and thus denied the motion. Tr. 346. It did not, and does not, consider the validity of the contract itself to be at issue. *Id.* As the Chairman indicated during the course of the proceeding, if some jurisdiction rules in the future that the contract is invalid and the reclamation laws apply, another source of water will have to be found or Palo Verde will be shut down. *Id.*

II. The Claims of the Pima-Maricopa Indian Community

Contrary to the assertions of the Intervenor, this Licensing Board is not obliged under NEPA to consider all issues which are currently the subject of litigation in other forums and which may some day have an impact on the amount of effluent available to Palo Verde. It is true that this agency has a responsibility under NEPA to "predict the environmental effects of a proposed action before the action is taken and these effects fully known." *Scientists' Institute for Public Information, Inc. v. AEC*, 481 F.2d 1079, 1092 (D.C. Cir. 1973); *quoted in State of Alaska v. Andrus*, 580 F.2d 465, 473 (D.C. Cir. 1978), *vacated, in part, sub nom., Western Oil and Gas Association v. Alaska*, 439 U.S. 922 (1978). Where these effects are remote and speculative, agencies are not automatically precluded from

proceeding with a project until all uncertainties are removed. *State of Alaska v. Andrus, Id.* While the decisionmaker must weigh the cost of uncertainty. "where the responsible decisionmaker has decided that it is outweighed by the benefits of proceeding with the project without further delay, the courts may not substitute their judgment for that of the decisionmaker and insist that the project be delayed while more information is sought. *Id.* at 473-4. The D.C. Circuit quoted with approval the 9th Circuit's 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 were known, it is doubtful that any project could ever be initiated." *Jicarilla Apache Tribe of Indians v. Morton*, 471 F.2d 1275, 1280 (9th Cir. 1973) (emphasis added by the D.C. Circuit).

Both the Licensing Board and the Joint Applicants are aware of the pending lawsuit brought by the Pima-Maricopa Indian Community against the Department of the Interior. If the issue is resolved in favor of the Indian Community, the supply of effluent needed to run Palo Verde may be curtailed. It is not the job of, nor is it within the jurisdiction of, this Licensing Board to resolve this issue. It is currently being litigated in its proper forum. The Board is thus faced with the choice of withholding the license to operate Palo Verde until the lawsuit is resolved in Federal District Court, or of allowing Palo Verde to operate if it finds that there is presently an assured supply of water. We have chosen the latter course of action. The Indian lawsuit may take several years to resolve. Palo Verde has been constructed and stands ready to operate. To delay its operation further based on a speculative result will cause an undue and unnecessary financial burden to fall on both Applicants and ratepayers. In contrast, no irreparable harm will be done if the plant is allowed to operate. If the outcome of the lawsuit renders unavailable the effluent necessary to operate Palo Verde, the plant will shut down unless other sources of effluent can be found. This is a risk assumed by the Applicant as a condition of the operating license. While there are financial uncertainties inherent in this situation, there is a certainty that considerable costs will be incurred if Palo Verde stands idle during the pendency of a lengthy litigation.

The recent ruling of the United States Court of Appeals for the District of Columbia is not at odds with these principles. In *Natural Resources Defense Council v. NRC*, No. 74-1586 (D.C. Cir. April 27, 1982), the majority held that the NRC's Table S-3 Rules¹ were invalid due to their

¹ The table S-3 Rules established a system by which to consider and disclose the environmental impact of the uranium fuel cycle in compliance with NEPA. *Slip op.* at 4.

failure to allow for proper consideration of the uncertainties that underlie the assumption that solidified high-level and transuranic wastes will not affect the environment once they are sealed in a permanent repository. *Slip op. at 69.*

In a lengthy opinion, the court commented that among the environmental costs that an agency must consider under Section 102(c) of NEPA, 42 U.S.C. § 4332(c), are "significant environmental risks — probabilities or possibilities of environmental damage. Such risks may be presented due to the underlying randomness of nature. Or they may be due to human uncertainties over either the character of both random and nonrandom phenomena or the ability of future technology to cope with those phenomena." *Slip op. at 36-7* (citations omitted). The Intervenor misconstrues this dicta to apply not only to environmental phenomena, but to any uncertainties which may in the future have an impact, however remote and speculative, on environmental concerns. The D.C. Circuit was concerned about the possible impact of solidified high level and transuranic waste disposal on the environment, an impact which is presently unknown. The issue in controversy in our case concerns a dispute over legal rights. This dispute may in the future involve environmental effects, which have already been considered. As previously explained, if the lawsuit should produce an environmental effect which negates an assured supply of effluent for Palo Verde, the plant will not operate. Therefore, there are no environmental uncertainties to consider. The uncertainty in this case is a *legal* uncertainty, which is now under the jurisdiction of the United States District Court System; it is not within the jurisdiction of this Licensing Board.

The Licensing Board therefore confirms its oral rulings of April 27 and May 26, 1982.

For the foregoing reasons and in consideration of the entire record in this matter, it is this 4th day of June, 1982

ORDERED

That Intervenor's Motion To Reconsider Board's Ruling Of April 27, 1982 As To The Inadmissibility Of The Effects Of The Claims Of The Pima-Maricopa Indian Community On Applicants' Source Of Water And The Legality Of Applicants' Contract For Effluent, dated May 14, 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

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)

June 16, 1982

The Licensing Board reviews submissions of the parties concerning siren alert system and declines to reopen the record for further hearings on adequacy of the siren system. The Board determines that adequate alternate arrangements for alerting the public can be made in any areas of siren deficiency.

RULES OF PRACTICE: REOPENING FOR FURTHER HEARINGS

Reopening for further hearings is within the Board's discretion and need not be done absent a showing that the outcome of the proceeding might be affected.

MEMORANDUM AND ORDER
(Declining to Reopen the Record on the Adequacy
of the Siren Warning System)

Our Initial Decision of May 14, 1982 (LBP-82-39, 15 NRC 1163) authorizing operating licenses for San Onofre, Units 2 and 3, was accompanied by an unpublished Order directing several questions to the parties and to the City of San Clemente about the adequacy of the siren warning

system in the plume EPZ. We retained jurisdiction over that matter, pending receipt and evaluation of responses to our questions. We have received responses from all parties and from the City, supported by affidavits, technical data, and other information.

Our analysis of these responses leads us to these conclusions: The Board will not take any further action on this matter. We leave to the Staff in the first instance any action that may be required in the light of subsequent events. The present record will fully support a finding of reasonable assurance concerning the siren warning system when buttressed by the Staff confirmation we are requiring — *i.e., that the sirens perform as expected or that, in any areas of deficient performance, specific arrangements for alternate means of public notification have been made.** We base these conclusions on the factors described in the following paragraphs.

Submissions of the Applicants and NRC Staff. When the record was closed last October, the sirens were installed but not yet tested. The submissions of the Applicants and the Staff are in essential agreement and indicate the following facts and circumstances:

- The sirens originally installed and first tested in January 1982 were defective and did not produce adequate warning signals.

- Thirty-nine of the forty sirens were subsequently replaced with sirens from a different manufacturer.

- The new sirens have been tested. The Staff guidance from NRC and FEMA in NUREG-0654 provides that siren systems should emit a signal 10 dB above average daytime ambient background, and that a conservative estimate of ambient background in areas with population below 2000 people per square mile is 50 dB. The most recent tests show that there is only two small areas in San Clemente that do not meet the NUREG-0654 standards.

- The Applicants have committed themselves to take special compensatory action in the non-complying areas in San Clemente, and, where necessary, in any noncomplying areas outside the City in the EPZ. Such actions will be comparable to those described and approved by the Board in our Initial Decision (§ G 11).

- Appropriate NRC and FEMA Staff personnel have concluded that (1) the present siren warning system for San Onofre is consistent with its description in the record and that it meets the planning standard of 10

* The underscored language was implicit in the formulation of this license condition in the Initial Decision. We are making it explicit because it now appears likely that there will be some areas of deficient siren performance.

CFR 50.47(b)(5), the criteria of Part 50, Appendix E, Part D 3, and the guidance of NUREG-0654.

- In addition, Mr. Nauman of FEMA, an emergency planning expert who testified extensively at the hearing, states that (1) the alternate means of notification approved by the Board are adequate to alert the public should the sirens fail; (2) alternate methods of notification, such as a NOAA radio-type system or cablevision override, would not improve the siren system and have significant disadvantages; (3) the Applicants have "demonstrated a highly conscientious effort to correct the siren deficiencies;" and that (4) "FEMA intends to continue monitoring the notification process for San Onofre . . . to assure the protection of the health and safety of the public."

San Clemente's Concerns. As we initially read the City of San Clemente's letter of April 26, 1982 to the Commission, we thought that the City was concerned exclusively with the question whether the sirens alone would be, in Mayor Mecham's words, "an adequate alert and warning system." The thrust of that letter seemed to be that "the alert warning system must be multi-channeled" to overcome ambient noise conditions. The other "channels" suggested by the City for inclusion in their warning capabilities were a "NOAA-type radio system" or a "cablevision override system."

There are three associated but distinct steps in the public alert and instruction phase of emergency planning. Each of these steps is reflected separately in the NRC planning standards and in the contentions in this case.

First, there is an ongoing public education process in which the public is taught, among other things, that a long siren sound means: "There is an emergency. Turn on your radio or TV set for specific instructions."

Second, there is the actual notification step in a real emergency. This involves turning on the sirens, the public (at least most of it) hearing the sirens, realizing there is an emergency of some kind, and going to their radios or TVs for further instruction.

Third, there is the instruction phase, in which the public learns from radio or TV that there is a nuclear emergency and that they should take specific actions under present circumstances.

Bearing these distinct phases of the process in mind, we turn to San Clemente's response to the Order. In contrast to the apparent thrust of their letter of April 26, they now tell us that

Admittedly, the sirens cover the entire community. If they are turned on, it will result in people knowing that there is an emergency. However, we have conducted two separate, independent, surveys after the siren tests and have determined that the

most serious deficiency in the alert and warning concept is the fact that a significant number of people simply do not know what to do once the sirens are set off. We are actively seeking means of increasing that awareness through public education.

The letter goes on to state that although the Emergency Broadcast System is supposed to provide effective communications with the public, there are problems with that system, which are briefly listed. It then suggests that either a NOAA-type radio or cablevision override system would provide needed communications capabilities.

In its response to our Order, San Clemente has shifted the focus of their concerns away from notification of the public (the second step noted above) to the prior step of public education about emergencies and the subsequent step of instructions to the public (the first and third steps noted above). This Licensing Board no longer has jurisdiction over the issues raised in this case concerning those distinct first and third steps in the public alert and instruction phase of emergency planning for San Onofre. We retained jurisdiction only over the adequacy of the sirens to perform the public notification function, a part of Contention 2B. Our findings on the adequacy of the public education program (Contention 2C at 15 NRC 1258-1265), and of the physical and administrative means for public instruction following a siren warning (another part of Contention 2B at 15 NRC 1266-1268) are now pending before the Appeal Board. Any request to reopen the record on those matters at this time should be addressed to the Appeal Board.

Notwithstanding San Clemente's apparent acknowledgment that the present siren system is basically adequate for its purpose, Major Mecham's letters reflect some concern over the fact that some people will not hear the sirens. It is important to recognize that no warning system can be expected to reach 100 percent of the target population. As stated in NUREG-0654,

This design objective does not, however, constitute a guarantee that early notification can be provided for everyone with 100% assurance or that the system when tested under actual field conditions will meet the design objective in all cases. App. 3, at 1.

The best of siren systems presumably will fail to reach some people for a variety of reasons, including, for example, unusually high ambient noise levels in some places, individual hearing defects, being asleep, etc. But we think it reasonable to assume that a carefully engineered siren system will be heard by the great majority of the people in the EPZ and that virtually all those who do not hear the sirens will be warned soon thereafter. Experience indicated that many people would check on their neighbors,

particularly if they are hard of hearing or otherwise handicapped. Police and other emergency personnel could make area surveys or door-to-door checks. Remote areas can be checked by helicopter. And the high level of activity associated with a mass evacuation (if one is ordered) seems bound to have a strong ripple effect. Taking these factors into account, there is nothing in the submissions before us indicating that a supplemental warning system is needed in the San Onofre area.

Having found either no authority or no reason to act on San Clemente's concerns, we could elect to proceed no further with this extra-record correspondence from a non-party. We think it more appropriate, however, to treat San Clemente's correspondence as a late petition to intervene. Application of the five tests prescribed by rule for late petitions (10 CFR 2.714(a)(1)) requires its rejection. First, the City advances no reason (and we can think of none) why they did not file a timely petition several years ago. Second, the City's interest can be protected in the future by requests to the Staff for enforcement action if time and subsequent events show a need. The third test, whether the City's participation would assist in developing a sound record, no longer applies; the record has already been developed and we have found no reason to reopen. Fourth, the City's interest has been substantially represented to date by GUARD, some of whose members live there. Fifth, addition of another intervenor party at this stage could delay the proceeding.

GUARD's Request for Further Hearings. GUARD asks us to reopen the record for further hearings on the results of the siren tests and on the need for "additional systems such as NOAA." GUARD's request for hearing stands on a different footing from San Clemente's belated letter. As an intervenor party in this case from the beginning, GUARD has standing to request reopening for further hearings. However, reopening is within the Board's discretion. There is "no need to reopen absent a 'showing that the outcome of the proceeding might be affected thereby'" and that reopening would involve issues of "major significance." *Public Service Co. of Oklahoma (Back Fox Station)*, ALAB-573, 10 NRC 775, 804 (1978), quoting from *Public Service Co. of New Hampshire (Seabrook Station)*, ALAB-422, 6 NRC 33, 64, n.35 (1977) and *Vermont Yankee Nuclear Power Corp. (Vermont Yankee Station)*, ALAB-138, 6 AEC 520, 523 (1973). We apply these standards to GUARD's asserted justifications for reopening.

GUARD argues that the results of the siren tests should be submitted to the parties for review and for cross-examination at a hearing. As matters now stand, these results are being analyzed against objective criteria by the NRC Staff. If significant deficiencies are found, the Staff will require that they be fixed or that adequate interim arrangements be made, arrangements which we have already found to be available. Al-

though the siren adequacy determinations might be the subject of some debate were a hearing convened, they are relatively straightforward and objective — e.g., whether a particular siren does or does not produce a 60 dB sound at a certain distance. Absent special circumstances indicating a particular need, an opportunity for cross-examination on such determinations is not necessary. (Compare our discussion of medical arrangements at 15 NRC 1216-1217 of the Initial Decision) And where, as here, any deficiencies can be readily cured by interim arrangements, there is no realistic possibility that reopening would change the result.

The only new siren evidence GUARD has brought to our attention is certain materials from Mr. Jack Stowe, Manager of the Pendleton Coast Area of the State Department of Parks and Recreation, indicating that siren signals in some beach areas may be inadequate. The Applicants' Exhibit A to their submission indicates that most of the 15 sirens covering the beaches are very close to the waterline, and that they project a 60 dB signal 1000 to 2000 feet out to sea. This conflicting siren evidence indicates that the Staff should take a careful look at these beach areas. If any areas of inadequate signal exist, they should be marked for coverage by alternate means.

In addition, GUARD complains that "the sirens do not reach the ocean vessels within the EPZ." As we explained in our Initial Decision, it is not necessary to reach ocean vessels because they "would have relatively sophisticated communications equipment to receive word of the emergency and would, in any event, pass through the possible danger area in a short time." *Id.* at 1268, n.62.

GUARD questions the adequacy of the alternative means for alerting the public, noting that our finding on available vehicles and helicopters did not include data on numbers of vehicles and helicopters and estimates on times of arrival. GUARD also asserts, apparently as a statement of counsel, that

The use of helicopters is highly speculative as the noise of the motors would block out normal loud speaker systems. GUARD letter at 2.

As to the last point, Chief Ben Killingsworth, Commander of the Border Division of the California Highway Patrol, which includes all of the EPZ, testified under oath that there are at his disposal CHP helicopters from the Los Angeles area equipped with loudspeakers. (Tr. 8222) We accept the Killingsworth statement.

As to numbers of vehicles and distances, we think that particularized data are unnecessary when, as here, the record clearly indicates that potential back-up resources greatly exceed any anticipated needs. We believe, however, that as specific interim or permanent needs for alternate

means of notification are identified by the Applicants or the Staff, specific arrangements should be made to meet those needs.

In light of our earlier discussion of various points, we need not discuss GUARD's comments about alternate systems, except in one respect. GUARD cites as a significant advantage that one does not need to know what station to tune to if one has either a NOAA or a cablevision override system. We are willing to assume that many people who hear the siren may not know or may forget the EBS station or channel they are supposed to tune to. However, we are not willing to assume that such people would be suddenly bereft of their common sense or completely helpless. Rather, we believe that they would turn their dials until they got the right station.

In consideration of all the factors cited by GUARD, we conclude that a reopening of this case for further hearings on siren adequacy or related issues would not change the results previously reached, would be prejudicial to the Applicants, and is not warranted. GUARD's request to reopen for further hearings is denied. Mayor Mecham's letter of April 26, 1982 to the Commission and the submissions of the parties in response to our Order of May 14, 1982 are included in the record for the limited purpose of showing the bases for the actions we are taking in this Order and not as evidence bearing on any contention in this case.

The jurisdiction previously retained by the Board by our Order of May 14, 1982 and as described in our Initial Decision (at 15 NRC 1205, 1266-1267, 1291, nn.32, 61 and 67) is hereby terminated. The matters discussed herein are now ripe for appellate review.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**James L. Kelley, Chairman
ADMINISTRATIVE JUDGE**

**Dr. Cadet H. Hand, Jr.
ADMINISTRATIVE JUDGE**

**Elizabeth B. Johnson
ADMINISTRATIVE JUDGE**

Dated at Bethesda, Maryland
this 16th day of June, 1982.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

John H Frye, III, Esq., Chairman
Dr. Frank F. Hooper
Dr. M. Stanley Livingston

In the Matter of

Docket No. 50-358

**THE CINCINNATI GAS & ELECTRIC
COMPANY, *et al.***

**(Wm. H. Zimmer Nuclear
Power Station, Unit 1)**

June 21, 1982

Ruling upon a motion for discovery sanctions after Applicants' attorney terminated the deposition of a panel of witnesses before an Intervenor's attorney had completed his questions, the Licensing Board denies requests for a stay of the proceedings pending completion of the deposition and for a protective order restraining Applicants' attorney from similar conduct in the future as being moot and concludes that it lacks the power to assess costs against Applicants' attorney, even though such relief would appear to be appropriate, based upon these facts, in a Federal District Court.

**COMMISSION PROCEEDINGS: FINANCIAL ASSISTANCE TO
PARTICIPANTS**

The Commission's policy precluding funding of intervenors does not preclude an award of costs or attorneys' fees against a party, where such costs or fees are not to be paid out of NRC funds.

RULES OF PRACTICE: DISCOVERY (DEPOSITIONS)

The procedure for conducting a deposition under NRC practice is governed by 10 CFR §2.740a(d), which is adapted from Rule 30(c) of the Federal Rules of Civil Procedure.

RULES OF PRACTICE: DISCOVERY (GUIDANCE FROM JUDICIAL PROCEEDINGS)

While the Federal Rules of Civil Procedure are not themselves directly applicable to practice before the Commission, judicial interpretations of a Federal rule can serve as guidance for interpreting a similar or analogous NRC discovery rule.

RULES OF PRACTICE: PRECEDENTIAL EFFECT OF UNPUBLISHED NRC DECISIONS

Pursuant to 5 U.S.C. §552(a)(2)(c), unpublished agency decisions may not be given precedential effect against persons who were not parties to such decisions, unless those persons can be shown to have had actual knowledge of such decisions.

RULES OF PRACTICE: GUIDANCE FROM JUDICIAL PROCEEDINGS

Having selected some, but not all, of the discovery provisions set out in the Federal Rules of Civil Procedure, the Commission did not intend for the unselected Federal Rules to control its proceedings. *General Electric Company* (General Electric Test Reactor), LBP-78-33, 8 NRC 465 (1978); *Detroit Edison Company, et al.* (Enrico Fermi Atomic Power Plant, Unit 2), LBP-78-37, 8 NRC 575, 581 (1978).

RULES OF PRACTICE: DISCOVERY (SANCTIONS)

While 10 CFR §2.707 invests broad discretion to enter such orders "as are just" with respect to a default by a party, it specifically contemplates, with respect to discovery, that such orders are to be entered upon the failure of a party to comply with an earlier order.

**MEMORANDUM AND ORDER
(Ruling on ZAC Motion for Discovery Sanctions)**

I. Background

On January 12, 1981, pursuant to subpoenas issued by this Board, Troy B. Conner, Jr., Counsel for Applicants Cincinnati Gas & Electric Com-

pany, *et al.*, deposed Carolyn McIntosh, James Fite and Dorothy Seiger, each of whom had been previously identified by intervenor Zimmer Area Citizens-Zimmer Area Citizens Kentucky (ZAC) as proposed witnesses for the evidentiary hearings on emergency planning contentions. These witnesses are employed by the New Richmond, Ohio, School District as, respectively, the principal of the Monroe Elementary School, and administrative assistant to the superintendent, and the District's transportation supervisor.

ZAC had served written direct testimony in these proceedings for each of its other proposed witnesses upon this Board and the other parties on January 8, 1982. ZAC's Counsel, had, however, submitted a "Statement By Counsel" in lieu of direct testimony for these witnesses. He stated in that document that this procedure was necessary because either the New Richmond School Board, the Superintendent, or both, had forbidden these three witnesses to discuss any matter with Counsel for ZAC and had precluded these persons from taking any part in these proceedings, except as ordered by subpoena. By way of this "Statement", Mr. Dennison sought both the issuance of subpoenas directing that these three persons appear and testify before this Board, as well as the leave of this Board to conduct ZAC direct examination of these witnesses orally at hearing.

Subsequently, Mr. Conner deposed these three witnesses as a panel on Applicants' behalf. Mr. Dennison was present during this deposition and, upon completion of Mr. Conner's examination, sought to depose these witnesses himself.

Mr. Conner, at Page 21 of the transcript of this deposition, objected to this procedure as not being the Applicants' purpose in scheduling this deposition. Thereafter, Mr. Conner objected to Mr. Dennison's questions regarding the school site shared by the New Richmond Elementary, Middle and High Schools (Dep. Tr. 26).

Mr. Conner stated that he had asked these witnesses no questions about this school site and asserted that Mr. Dennison's questions could not exceed the scope of his questions. In response to the suggestion that it might be in order to consult the Board on this question, possibly resulting in a continuance, Mr. Conner reasserted that he had asked no questions about the New Richmond school site. Mr. Dennison disputed this (*Id.*).

When Mr. Dennison resumed questioning the witnesses, Mr. Conner asked the court reporter to stop transcribing (Dep. Tr. 27). Mr. Dennison challenged Mr. Conner's authority to terminate ZAC's examination of these witnesses, and asked the court reporter to continue (Dep. Tr. 28)

During the ensuing argument, Mr. Conner stated the following reasons for desiring to terminate the deposition:

. . . The position of the Applicant is that this goes beyond the scope of anything stated in questioning by me. And since this is

the Applicant's deposition and since the Applicant is paying for it and since we have no intention of assisting Mr. Dennison to interrogate these witnesses . . . , I've directed the reporter to cease to transcribe (Dep. Tr. 28-29).

As further justification for terminating the deposition, Mr. Conner stated the Applicant's desire to avoid involving the witnesses in any problems with their school district which might result from their having been directed not to discuss this matter with Mr. Dennison "beyond the scope of the matter that they were subpoenaed here today to discuss, which I have now completed" (Dep. Tr. 29).

Mr. Dennison disputed Mr. Conner's characterization of the scope of the matters to which these witnesses could be required to testify and stated for the record those matters into which he would have inquired if permitted to continue (Dep. Tr. 30-31). At the point where the deposition was halted, Mr. Dennison's questions were within the scope of Mr. Conner's examination.

Mr. Conner concluded the deposition with the following statement:

For the record, I'm advising the witnesses that Mr. Dennison, of course, may have the right to ask you about the matters he just indicated. But, it's not our intention to involve you in any difficulties with your school system. So, on that basis, you are hereby excused from our subpoena (Dep. Tr. 31).

II. ZAC's Motion

In its motion, ZAC alleged that Mr. Conner's above-recited actions were in violation of 10 CFR §2.740a(d) and Rule 30(c) of the Federal Rules of Civil Procedure (FRCP), and sought, pursuant to FRCP Rule 37(a)(2) and (4), to have this Board: (1) stay these proceedings pending his completion of these depositions; (2) enter a protective order pursuant to 10 CFR §2.740(c) restraining Mr. Conner from similar conduct at any future deposition; and (3) order that Mr. Conner pay costs and attorneys' fees alleged to have been occasioned by his actions including reasonable attorney's fees and expenses for attendance at the deposition, preparation of the instant motion, and either (a) the costs of conducting future depositions, or, if no new depositions are ordered, (b) the costs of subpoenaing and examining these witnesses at hearing.

III. Depositions Under NRC Regulations

Pursuant to 10 CFR §2.740a(d), the procedure for conducting a deposition under NRC practice is described as follows:

(d) the deponent shall be sworn or shall affirm before any questions are put to him. Examination and cross-examination shall proceed as at a hearing. Each question propounded shall be recorded and the answer taken down in the words of the witness. Objections on questions of evidence shall be noted in short form without the arguments. The officer shall not decide on the competency, materiality, or relevancy of evidence but shall record the evidence subject to objection. Objections on questions of evidence not made before the officer shall not be deemed waived unless the ground of the objection is one which might have been obviated or removed if presented at that time.

This section is adapted from Rule 30(c), FRCP,¹ 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,² judicial interpretations of a Federal rule can serve as guidance for interpreting a similar or analogous NRC discovery rule.³ In its January 29, 1982 motion, ZAC took issue with Mr. Conner's characterization of a deposition as being "owned" by the party establishing that deposition. In ZAC's view, Mr. Conner had attempted to conduct Applicant's deposition of the three New Richmond School District witnesses on an "ex parte" basis, denying ZAC the right to cross-examine them.

ZAC states that while it has found no case with a factual setting quite the same as this, it believes that Mr. Conner's termination of the deposition is comparable to that of an attorney who instructs a deponent not to answer a question, thereby preventing a deposition from continuing. Relying on *Ralston Purina Co. v. McFarland*, 550 F.2d 967, 972 (4th Cir. 1977) and *Coates v. Johnson and Johnson*, 85 F.R.D. 731, 732-733 (N.D.Ill., E.D. 1980), ZAC asserts that Mr. Conner's conduct was both improper and prejudicial to its rights, and seeks the issuance of sanctions against Mr. Conner.

In his January 28, 1982, Answer to the Motion, Mr. Conner asserts that it was not he, but Mr. Dennison who violated the requirements of the

¹ See Statement of Considerations, 37 Fed. Reg. 15127 (July 28, 1972).

² Rule 1 of the Federal Rules of Civil Procedure provides that these rules govern the procedure in Federal District Courts, and the Commission has not adopted these rules *in toto*.

³ *Detroit Edison Company, et al.* (Enrico Fermi Atomic Power Plant, Unit 2), LBP-78-37, 8 NRC 575, 581 (1978); *Toledo Edison Company* (Davis-Besse Nuclear Power Station), ALAB-300, 2 NRC 752, 760 (1975).

Commission's regulations during the course of the deposition. Mr. Conner notes that 10 CFR §2.740a(d) specifies that "[e]xamination and cross-examination shall proceed as at a hearing," which he interprets as meaning that "counsel for ZAC/ZACK was not entitled on cross-examination to go beyond the scope of the questions asked by Applicants on direct examination at the deposition." Mr. Conner also contends that the scope of this Board's subpoenas was limited to those matters into which he chose to question the New Richmond witnesses. He cites no authority for either of these propositions.

The questions which this Board must resolve, therefore, are first, whether Mr. Dennison's questioning must be limited to the scope of Mr. Conner's examination, and second, whether Mr. Conner had the right to terminate the deposition.

A. Scope of Cross-examination at a Deposition

To the best of this Board's knowledge, the permissible scope of cross-examination at a deposition held pursuant to 10 CFR §2.740a(d) of the Commission's regulations does not appear to have been addressed previously in an NRC adjudication. What little authority we have found interpreting the parallel language of the Federal Rules of Civil Procedure, however, directly contradicts Applicants' assertion that ZAC's questioning was limited to those matters raised by Mr. Conner.

In *Spray Products Inc. v. Strouse, Inc.*, 31 F.R.D. 211 (E.D.Pa. 1962) (a suit for patent infringement), the plaintiff had noticed the depositions of two witnesses employed by the company which packaged plaintiff's products. While these witnesses had appeared willingly and testified as experts on plaintiff's behalf on direct examination, they had refused, on advice of counsel, to testify on cross-examination with regard to their employer's business. Plaintiff took the position that such questions were beyond the scope of direct examination and, therefore, were not permissible cross-examination.

The court disagreed, holding that the ordinary trial limitations on the scope of cross-examination do not preclude a party from inquiring into relevant matters beyond the scope of direct at a deposition. Noting that under the FRCP, a party does not make a person his own witness by taking his deposition,⁴ the court concluded that a party other than the one

⁴ Former Rule 32(c) which described the effect of taking and using depositions, explicitly stated this proposition. This Rule was abrogated as unnecessary, however, with the adoption of the Federal Rules of Evidence, since those rules provide that any witness may be either

(CONTINUED)

noticing a deposition may examine the deponent on issues beyond the scope of those matters raised by the noticing party without the necessity of a new notice of deposition.

Professor Moore, upon whom the court in *Spray Products* relied, states:

[If] the party taking the deposition examined the deponent only as to one issue in the case, it would seem that another party may examine the deponent on any other issues by direct examination without the necessity of serving a prior notice of the taking of deposition. In so doing, he did not make the deponent his witness. . . . Thus the only practical effect in discovery examinations of the restriction upon the scope of cross-examination is to prevent the use of leading questions when the interrogation is upon issues which were not the subject matter of the examination in chief; and the deponent is neither an unwilling nor a hostile witness nor an adverse party nor an officer, director, or managing agent of a public or private corporation of a partnership or association which is an adverse party. (Footnotes omitted.)⁵

We believe that this interpretation of Rule 30(c) should apply with equal force to the language of 10 CFR §2.740a(d). Whatever facial validity Applicants' argument may have had, we would be extremely reluctant to hold, based upon nothing more than the above-quoted language of 10 CFR §2.740a(d), that the drafters of these regulations contemplated that each party to an NRC proceeding was to be required to convene its own deposition if it seeks to question a witness as to any matter beyond the scope of those issues raised on direct by the party noticing the deposition. The additional inconvenience, expense and, in particular, delay which such a procedure could occasion in our proceedings would appear to vastly outweigh any potential benefits accruing from Applicants' reading.

The Board also agrees with ZAC that no party has a proprietary interest in a deposition, and for that reason, no party has a proprietary interest in a subpoena issued to a deponent. While Applicants deem it unfair to allow ZAC to benefit from a deposition at Applicants' expense, such has long been the practice in civil litigation. The Board believes the drafters of Commission regulations intended the same results to obtain under NRC practice by the promulgation of 10 CFR §§2.720(d) and

contradicted or impeached. See 4A Moore's Federal Practice, Para. 32.10 (1981). The Commission regulation based on former Rule 32(c) still provides that "[a] party shall not be deemed to make a person his own witness for any purpose by taking his deposition." 10 CFR §2.740a(g).

⁵ 4A Moore's Federal Practice, para. 30.58 (1981).

2.740a(h), which require that fees for subpoenas and the fee for deponents, respectively, are to be paid by the party at whose instance the subpoena was issued and the deposition was held.

We therefore conclude that Mr. Dennison's attempt to depose the New Richmond School District witnesses was proper, whether or not those matters objected to by Mr. Conner were beyond the scope of his direct examination.

B. Objections at Depositions

Pursuant to 10 CFR §2.740a(d), objections on questions of evidence at a deposition are simply to be noted in short form, without argument. Mr. Conner's objection that Mr. Dennison's questioning was going beyond the scope of those matters raised on direct examination was a question which should have been noted for the record and Mr. Dennison allowed to continue.

Mr. Conner was aware that this is Commission practice. In the course of this deposition, Mr. Conner actually quoted it when Mr. Dennison began to state his reasons for objecting to a question:

For the record then, I'm stating this for the record; under the NRC practice, objections are not argued on depositions but, would be argued in the proceeding in the event the matter were ever to be used in the proceeding. (Dep. Tr. 14.)

Applicants' response does not clearly explain the basis for Mr. Conner's conclusion that he was entitled to terminate the deposition, instead of merely objecting on the record. Applicants do assert, at page 10 of their response, that ZAC should have sought a prompt ruling from this Board on Mr. Conner's termination of the deposition, but do not explain why such a ruling was not sought from the Board by Mr. Conner prior to terminating the deposition. Clearly, as the proponent of the objection, it was Mr. Conner's obligation to seek a ruling if he were not content to object on the record.

Applicants also attempt to distinguish the *Ralston Purina* case cited by ZAC. As characterized by Applicant, *Ralston Purina* was a case in which plaintiffs' counsel instructed the deponent, plaintiffs' employee and principal witness, not to answer certain questions propounded to him on direct examination "apparently on grounds of relevancy." Applicant asserts that:

This is a far cry from the situation here, where Applicants' counsel was deposing a non-party who had been listed as a witness by an opposing party and where the objection went to the scope of the direct examination and hence the subpoenas, *i.e.*, not merely an evidentiary objection. (App. Answer at 9.)

Applicants' argument is not valid. Assuming that he was operating under the mistaken impression that Mr. Dennison's questions were not proper, Mr. Conner had no basis for terminating the deposition.

As stated in *United States v. I.B.M. Corp.*, 79 F.R.D. 378 (S.D.N.Y. 1978), quoting *Shapiro v. Freeman*, 38 F.R.D. 308, 311-312 (S.D.N.Y. 1965), with respect to the conduct of depositions:

It is not the prerogative of counsel, but of the court, to rule on objections. Indeed, if counsel were to rule on the propriety of questions, oral examinations would be quickly reduced to an exasperating cycle of answerless inquiries and court orders. Alternatively, if the plaintiff's attorney believed that the examination was being conducted in bad faith, that the information sought was privileged, or that the deponents were being needlessly annoyed, embarrassed, or oppressed, he should have halted the examination and applied . . . for a ruling on the questions, or for a protective order He had no right whatever to impose silence or to instruct the witnesses not to answer, especially so when the witnesses were not even his clients. *Id.* at 311-12 (footnotes omitted) (emphasis added).

Mr. Conner chose to rule on his own objection and unfortunately ruled the wrong way. Regardless whether he was right or wrong in his ruling, Mr. Conner's conduct in failing to approach the Board for a ruling was at variance with the Commission's Rules.

IV. Discovery Sanctions Under NRC Regulations

Having determined that ZAC is correct on the merits, we turn our attention now to the subject of relief.

During oral argument of this motion at hearings, Counsel for ZAC stated, in response to a question from this Board, that he did not believe ZAC would be prejudiced by Mr. Conner's actions, should this Board allow him leeway to question the New Richmond School District witnesses at hearing as if he were conducting a deposition (Tr. 4951). With that understanding, these hearings proceeded.

While this Board would have considered the request for a stay of the hearings to permit the deposition of these witnesses had prejudice been shown, such relief was inappropriate in the absence of any allegation of prejudice. In any event, as the examination of these witnesses at hearing has been completed, we find ZAC's request for a stay is moot.

Similarly, we deny ZAC's motion for a protective order restraining Mr. Conner from similar conduct as moot.

The third form of relief which ZAC seeks by its motion is the grant of costs and attorneys' fees, pursuant to FRCP Rule 37(a)(2) and (4), which are alleged to have been incurred as a result of Mr. Conner's actions. Such monetary awards have been considered to be appropriate sanctions for violations of the clear language of Rule 30(c) where there is no showing of substantial justification or mitigating circumstances. *International Union of Electrical, Radio and Machine Workers v. Westinghouse*, 91 F.R.D. 227 (D.C. D.C. 1981); *Coates v. Johnson and Johnson*, 85 F.R.D. 731 (N.D.Ill., E.D. 1980).

Applicants assert, at page 10 of their response, that an NRC licensing board lacks the authority to assess costs, relying upon *Consumers Power Company*. (Midland Plant, Units 1 and 2), Docket Nos. 50-329 and 50-330, unpublished order dated September 23, 1977, at 4-5. They further assert that an award of attorneys' fees is both beyond the authority of a licensing board and in violation of the Commission's policy against funding intervenors.

At the outset, we reject as specious any argument that the Commission's policy against funding intervenors would preclude us from awarding costs or attorneys' fees based upon this transaction. While this policy would likely preclude our granting any motion seeking costs or attorneys' fees which were to be paid out of NRC funds, Applicants cannot claim that the Commission's policy was intended to protect Applicants' financial resources.

We decline to accord any weight to the *Midland* order upon which Applicant relies, since we believe it would violate the Administrative Procedure Act's notice requirements to rely upon an unpublished order as precedent.⁶

In the absence of a specific authorization in the Commission's Rules of Practice, ZAC relies on Rule 37(a)(2) and (4), FRCP, which specifically authorizes the award of reasonable expenses, including attorney's fees, in this situation. We agree that such an award is justified by the facts.

However, the lack of specific authorization to make such an award presents an obstacle. While the Commission has provided for sanctions with regard to discovery in §2.707, it has not adopted Rule 37, FRCP. Rule 37 is therefore inapplicable. "[H]aving selected some, but not all, of the discovery provisions set out in the Federal Rules, the Commission did not intend for the unselected Federal Rules, to control its proceedings." *General Electric Company* (Vallecitos Nuclear Center-General Electric Test Reactor), LBP-78-33, 8 NRC 461, 465 (1978); *Fermi, supra*, 8 NRC at 581.

⁶ See 5 U.S.C. §552(a)(2)(C).

While §2.707 invests broad discretion in presiding officers to enter such orders "as are just" with respect to a default by a party, it specifically contemplates, with respect to discovery, that such orders are to be entered on failure of a party to comply with an earlier order.⁷ No such order exists; in fact, the transaction in question occurred after formal discovery had closed and was a part of discovery being conducted voluntarily by the parties.

If such an order did exist, the question of our authority to make the award ZAC seeks would be fairly presented. An analogous situation is presented by two recent construction permit withdrawal proceedings, *Puerto Rico Electric Power Authority* (North Coast Nuclear Plant, Unit 1) ALAB-662, 14 NRC 1125 (1981) and *Duke Power Company* (Perkins Nuclear Station, Units 1, 2 and 3), ALAB-668, 15 NRC 451 (1982).

In these cases, the Appeal Board expressly left ". . . 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."

We conclude that, Rule 37(a)(2) and (4) (FRCP) not having been adopted by the Commission, and no preexisting discovery order having been violated, we lack the authority to award ZAC the fees and costs it seeks.

In consideration of the foregoing, it is this 21st day of June, 1982.

ORDERED

1. ZAC's request for a stay of these proceedings is denied as moot;
2. ZAC's request for a protective order is denied as moot; and
3. ZAC's request for attorney's fees and expenses is denied as beyond the authority of this Board.

**FOR THE ATOMIC SAFETY AND
LICENSING BOARD**

**John H Frye, III, Chairman
ADMINISTRATIVE JUDGE**

Bethesda, Maryland
June 21, 1982

⁷ In this respect, § 2.707 parallels Rule 37(b) which deals with sanctions imposed for failure to comply with a discovery order. As noted, ZAC relies on Rule 37(c) which covers this situation because no preexisting order is involved.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**ATOMIC SAFETY AND LICENSING BOARD****Before Administrative Judges:****John H Frye, III, Esq., Chairman**
Dr. M. Stanley Livingston
Dr. Frank F. Hooper**In the Matter of****Docket No. 50-358****THE CINCINNATI GAS & ELECTRIC
COMPANY, et al.****(Wm. H. Zimmer Nuclear
Power Station, Unit 1)****June 21, 1982**

Issuing its initial decision in this operating license proceeding, the Licensing Board resolves all current Board raised questions and health and safety contentions in favor of Applicants and orders that conditions be placed on Applicants' license with respect to certain off-site emergency planning matters. The Board also holds that further proceedings are necessary with respect to school evacuation and that no operating license will be issued prior to FEMA's filing of at least those of its findings that relate to admitted contentions, the Staff's issuance of its supplement to the Safety Evaluation Report on those findings, and the parties being given a reasonable opportunity to comment. The Board retains jurisdiction to rule on an outstanding motion to admit late-filed quality assurance contentions.

**OPERATING LICENSE HEARINGS: ISSUES FOR
CONSIDERATION**

Pursuant to 10 CFR §2.760a and Appendix A to 10 CFR Part 2, Section VIII, the Board in an operating license proceeding is called upon to decide only those issues in controversy among the parties, and any serious safety, environmental, or common defense and security matters raised by the Board.

RULES OF PRACTICE: FINDINGS OF FACT

Pursuant to 10 CFR §2.754(a), contentions as to which an intervenor submits no proposed findings may be deemed to have been abandoned.

LICENSE CONDITIONS: EXPLICITNESS

When clear courses of corrective action are present, deficiencies identified in an emergency plan may be dealt with by means of a license condition. With such conditions in place, findings of reasonable assurance on the state of emergency planning can be made.

LICENSE CONDITIONS: APPROPRIATENESS

The mechanism of post-hearing resolution through the use of licensing conditions should be used sparingly and only in clear cases. In doubtful cases, such matters should be resolved in an adversary framework prior to the issuance of licenses, reopening hearings if necessary.

EMERGENCY PLANNING: CONTENTS OF PLANS

A radiological emergency response plan is not invalid solely because it relies for its implementation upon referenced standard operating procedures, not included in the plan itself. Pursuant to NUREG-0654, there is no single format for an emergency response plan, so long as it meets all applicable criteria. The plans themselves should be as concise as possible with supporting materials incorporated by reference.

EMERGENCY PLANNING: 10 MILE EMERGENCY PLANNING ZONE (EPZ)

Pursuant to 10 CFR §50.47(c)(2), the exact size and configuration of the EPZ 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. Absent evidence that conditions such as those enumerated in 10 CFR §50.47(c)(2) require otherwise, the EPZ should generally be about 10 miles in diameter.

EMERGENCY PLANNING: RELOCATION CENTERS

The evacuation plan is not inadequate or incapable of implementation solely because locations preferable to those selected by the plan for the establishment of relocation centers exist. Those locations selected must themselves be shown to fail to comply with regulatory requirements before the establishment of relocation centers at preferable locations could be ordered.

EMERGENCY PLANNING: PUBLIC NOTIFICATION SYSTEM

Litigation of the adequacy of the public notification system need not abide the testing of that system. This is common practice in nuclear licensing. Any deficiencies revealed by operational tests must be corrected prior to operation.

TECHNICAL ISSUES DISCUSSED

10 CFR Part 50, Appendix I; 10 CFR Part 50, Appendix I (Cost-Benefit Balance); welds on cable tray transition fittings; fire insulation matters for cable trays.

APPEARANCES

**Troy B. Conner, Jr., Esq., and Mark J. Wetterhahn, Esq., of
Conner & Wetterhahn, Washington, D.C., and**

**William J. Moran, Esq., General Counsel, and Jerome A.
Vennemann, Esq., Counsel for The Cincinnati Gas & Electric
Company, *et al.***

John D. Woliver, Esq., for Dr. David B. Fankhauser

James H. Feldman, Jr., Esq., for the Miami Valley Power Project

**Andrew B. Dennison, Esq., for Zimmer Area Citizens and Zimmer
Area Citizens of Kentucky**

**David K. Martin, Esq., Assistant Attorney General for the
Commonwealth of Kentucky**

**William Peter Heile, Esq., Assistant City Solicitor for the City of
Cincinnati**

Deborah Faber Webb, Esq., Mrs. Mary Reder and Mr. Donald Reder, for the City of Mentor, Kentucky

George E. Pattison, Esq., Prosecuting Attorney, and Lawrence R. Fisse, Esq., Assistant Prosecuting Attorney, for Clermont County, Ohio

George Jett, Esq., General Counsel, and Brian P. Cassidy, Esq., Office of the General Counsel, for the Federal Emergency Management Agency, Washington, D.C.

Charles A. Barth, Esq., Myron Karman, Esq., Lawrence Brenner, Esq., and Janice E. Moore, Esq., Office of the Executive Legal Director, U.S. Nuclear Regulatory Commission, for the NRC Staff

INITIAL DECISION (OPERATING LICENSE PROCEEDING)

I. INTRODUCTION

This Initial Decision concerns the application filed with the Nuclear Regulatory Commission by The Cincinnati Gas & Electric Company, for itself and as agent for Columbus & Southern Ohio Electric Company and The Dayton Power & Light Company (hereinafter collectively "Applicants"), for a facility operating license which would authorize the operation of the Wm. H. Zimmer Nuclear Power Station (hereinafter "Zimmer Station," "Station," or "facility"). The Cincinnati Gas & Electric Company is responsible for operation of the facility, a boiling water reactor designed to operate at a core power level up to 2436 thermal megawatts with a net electrical output of approximately 800 megawatts. The facility is located on Applicants' site on the eastern shore of the Ohio River, one-half mile north of Moscow and about 24 miles southeast of Cincinnati, in Washington Township, Clermont County, Ohio. Commercial operation of the facility is projected for December, 1982.

On October 27, 1972, following technical reviews by its Staff and the Advisory Committee on Reactor Safeguards, and hearings and a favorable Initial Decision (LBP-72-27, 5 AEC 133 [1972]) by an Atomic Safety and Licensing Board, the Atomic Energy Commission issued a construction permit for the Zimmer Station.

Following docketing of the application for an operating license, on September 28, 1975, the Nuclear Regulatory Commission (successor to the

Atomic Energy Commission) published a notice entitled "Receipt of Application for Facility Operating License; Availability of Applicants' Environmental Report; and Consideration of Issuance of Facility Operating License and Opportunity for Hearing" (40 Fed. Reg. 43959). In response to the notice, petitions for leave to intervene were filed by the Miami Valley Power Project ("MVPP"), Dr. David B. Fankhauser, Mrs. Marie B. Leigh and the City of Cincinnati. Following a prehearing conference the Atomic Safety and Licensing Board established to rule on the petitions admitted all of the petitioners as parties to the proceeding and specified the contentions at issue. It also issued a Notice of Hearing commencing this proceeding on March 19, 1976.

By letter of September 9, 1977, the Staff informed the Board that Mrs. Leigh had died. Her contentions are therefore moot.

In Memoranda and Orders of April 22, 1980 (LBP-80-14, 11 NRC 570) and July 2, 1980 (LBP-80-19, 12 NRC 67), Zimmer Area Citizens and Zimmer Area Citizens of Kentucky ("ZAC-ZACK" or "ZAC") were admitted as intervenors. Their contentions, all related to emergency planning and monitoring, were conditionally admitted subject to reconsideration and modification pending adoption of the final NRC rules on this subject.

In a Memorandum and Order of January 29, 1980 (LBP-80-6, 11 NRC 148), the City of Mentor, Kentucky, was admitted under the provisions of 10 CFR §2.715(c). Pursuant to the same provision, the Commonwealth of Kentucky was admitted on April 23, 1980, and Clermont County, Ohio, on June 11, 1980.

In a motion of May 18, 1982, MVPP seeks admission of eight new contentions concerning quality assurance and corporate character and competence. We have elected to issue this Initial Decision in advance of our ruling on this motion. While we intend to rule on this motion promptly, we do not wish to delay the commencement of the additional proceedings which may be necessary as a result of this Initial Decision pending that ruling. This Initial Decision rules on all presently outstanding contentions; our rulings herein and MVPP's motion may necessitate further proceedings and decisions in the future. Consequently we are retaining jurisdiction to deal with these matters.

The decisional record in this proceeding consists of the following:

- a. The material pleadings filed herein, including the petitions and other pleadings filed by the parties, and the orders issued by the Board during the course of this proceeding;
- b. The transcripts of the prehearing conferences on January 23, 1976 (Tr. 1-120), May 21-23, 1979 (Tr. 121-532), and October 29 and 30, 1981 (Tr. 4644-4865), and the transcript of testimony of the evidentiary hearings with pagination from 533 to

7979 (pages 3600-3900 were skipped by the reporter). Limited appearance statements, not part of the decisional record, were heard as follows:

May 22, 1979	—	Tr. 221 - 360
May 23, 1979	—	Tr. 365 - 531
June 20, 1979	—	Tr. 889 - 975
June 26, 1979	—	Tr. 1533 - 1605
November 14, 1979	—	Tr. 3150 - 3223
January 25, 1982	—	Tr. 4872 - 4883
		Tr. 4899 - 4902
		Tr. 4938 - 4945;

c. All of the exhibits received into evidence which are identified in Appendix A to this Initial Decision.

A chronology of this proceeding is attached as Appendix B.

BOARD RAISED ISSUES

10 CFR Part 50 Appendix I, Cost Benefit

On June 20, 1979, the Board, pursuant to 10 CFR §2.760a and 10 CFR Part 2, Appendix A ¶ VIII(b), raised *sua sponte* the question whether the operation of Zimmer would comply with Section II.D of Appendix I to 10 CFR Part 50 (Tr. 781). The facility will comply with Appendix I dose levels (Tr. 2937, 2967, 2938, 2947, 2969, 2971). The Board has reviewed 10 CFR Part 50, Appendix I and the Commission's underlying decision (CLI-75-5, 1 NRC 277 [1975]) and concludes that the Commission's intent is to afford plants in the category of Zimmer more latitude than newer plants in meeting the "as-low-as-reasonably-achievable" standard. Plants such as Zimmer, *i.e.*, those for which an application was filed prior to January 2, 1971, are not bound by the guides on design objectives contained in Section II.D. However, if the plant can voluntarily meet the design objectives which are intended for newer plants, *i.e.*, Section II.A-C, and demonstrate compliance with the Annex to Appendix I which is a more stringent demonstration than would otherwise be required, the Board sees no reason why such standards should not be applicable. The Applicants have so committed themselves (Tr. 783, 786-88).

On June 26, 1979, the Board *sua sponte* raised questions related to whether scheduling of certain operations could result in a favorable cost-benefit ratio:

a. With respect to the cost-benefit balance contemplated by 10 CFR Part 50, Appendix I, Section II.D., the Board wishes to be

advised whether scheduling of releases from noncontinuous sources (*i.e.*, the mechanical vacuum pump and the dry well purge) could effect reductions in man-rem and/or man-thyroid-rem dose to the population reasonably expected to be within 50 miles of the reactor. In this context population includes but is not limited to school children; transients should be included. By scheduling of releases, the Board has in mind:

1. time: day/night for the dry well purge and variation of days (*e.g.*, weekends/weekdays/seasons) for both the dry well purge and the operation of the mechanical vacuum pump. In other words, in this analysis the parties should take into account the number of people at various directions and distances from the plant site at night versus the day and on weekends versus week days.
2. If a reduction in population dose may be achieved by one or more of the scheduling methods referenced above, either alone or in combination, the Board wishes to be further apprised of the cost thereof; in doing an estimate with respect to dry well purge, the parties may wish to segregate purges which may be rescheduled with little or no difficulty or expense from those where greater difficulty or expense is entailed. (Tr. 1428-29.)

Applicants' response to these questions follows Tr. 2937, Staff's Tr. 2967. Based on these responses, the Board concludes that scheduling releases from the dry well and mechanical vacuum pump would make an insignificant contribution to reduction of radiation doses expected to be received by the population in the area of the Zimmer facility. Scheduling of releases according to time and wind direction is not beneficial because of the infrequent occurrence of very favorable wind conditions and the small magnitude of the reduction of the population dose to be achieved by such scheduling. Considering these facts and recognizing the flexibility of operation contemplated by 10 CFR Part 50, Appendix I, the Board concludes that no limitation in operation beyond that presently contemplated by Appendix I for inclusion in the Technical Specifications is appropriate.

Pressure Testing of Doors

During the May 1979 prehearing conference, an affidavit executed by Robert Anderson, an ironworker who was employed to install and pressure check watertight doors at the Zimmer site, was submitted to the Board. The affidavit stated that during pressure testing 10 watertight doors leaked

between the concrete and the door frame imbedded into the concrete. (Direct Testimony of Thomas Vandel Regarding the Pressure Testing of Doors, following Tr. 1643).

Pursuant to 10 CFR §2.760a this Board raised as a potentially serious safety matter the allegations contained in Mr. Anderson's affidavit and requested the Staff to present evidence upon this matter. The Staff did so (*Id.*, Direct Testimony of Thomas Vandel Regarding Pressure Testing of Doors . . . , following Tr. 3140). The Board concludes that the Staff's investigation was adequate and that no further action is called for.

Nuts and Bolts for the Traveling Screen

During the June, 1979, hearings, an affidavit was submitted to the Licensing Board alleging that stainless steel nuts and bolts were not used in the installation of the "drag line" as was required. The Board raised this issue pursuant to 10 CFR §2.760a. Staff reviewed the matter on a site visit. Staff determined that the term "drag line" refers to the set of traveling screens installed in the water intake structure, non-safety related equipment. The Board concludes that the Staff's investigation of this matter was adequate and that no further action is called for (Direct Testimony of Thomas Vandel Regarding . . . Use of Improper Bolts for the Traveling Screen, following Tr. 3140).

Alleged Electrical Deficiencies

On June 29, 1979, MVPP submitted an affidavit of an electrician alleging that electrical problems and/or possible problems existed in seven areas. Pursuant to 10 CFR §2.760a we raised this matter as a Board issue. Staff investigated and testified that while some of the allegations related to safety components, these had been previously identified and analyzed by the NRC or the Applicants, or both (Direct Testimony of Jack Hughes and Thomas E. Vandel Regarding Electrical Deficiencies, Tr. 3116). The Board concludes that the Staff investigation was adequate and that no further action is called for.

Unresolved Safety Issues

The board has reviewed the staff's analysis of unresolved safety issues in the Safety Evaluation Report (Staff's Exh. 9 at Appendix C.)

Although none of these issues are in controversy they must be examined by the board. (*Virginia Electric & Power Company* [North Anna Nuclear Power Station, Units 1&2], ALAB-491, 8 NRC 245 [1978]).

We believe that these generic issues can be resolved and that the Zimmer facility can operate safely pending final resolution of all of these issues.

We find that the staff's analysis reflects current views and is a suitable foundation for our conclusion that they can be resolved without risk to safety.

OPINION

In the following opinion, the Board will discuss each of the contentions heard, explain to the extent necessary why the facts with respect to each contention have been found as they have, and rule on each contention.

Contention 1 (alleging failure to meet the design objectives of Appendix I to 10 CFR Part 50 because of the storage of spent fuel on site), those portions of Contention 2 which were not withdrawn (alleging that Applicants' radiological monitoring program is inadequate), and Contention 5 (asserting a lack of plans to train the local populace with respect to transportation accidents of shipments of radioactive materials), all sponsored by Dr. Fankhauser, were summarily disposed of favorably to Applicants. Contention 11 (alleging a lack of a need for the facility) and Contention 12 (alleging a lack of sufficient fuel supply), both sponsored by MVPP, were also summarily disposed of favorably to Applicants. (See unpublished Prehearing Conference Order of June 4, 1979, unpublished Memorandum and Order of February 4, 1982, and LBP-81-2, 13 NRC 36 [1981].)

Contention 2(a) (alleging a lack of provisions for radiological monitoring at the Moscow School, adjacent to the site) was withdrawn by Dr. Fankhauser in light of the fact that the school had been closed. Similarly, Dr. Fankhauser also withdrew Contentions 2(d) and 3 (relating to radiological monitoring pertaining to the City of Cincinnati's drinking water supply) in light of the settlement agreement between Applicant and the City. Dr. Fankhauser also withdrew Contention 4(a) (relating to emergency notification) because it was no longer relevant. (See Settlement Agreement of October 30, 1981, and unpublished Prehearing Conference Order of November 5, 1981.) Dr. Fankhauser was permitted to revise the remainder of Contention 4 in light of extensive developments with respect to offsite emergency planning since it was filed. Revised Contention 4 was denied admission in our unpublished Prehearing Conference Order of

December 3, 1981, except for Contention 4(12), (relating to the document "Circle of Safety") which was consolidated with ZAC-ZACK Contention 23(3).

Dr. Fankhauser's Contention 6 (alleging that the doses received by the school children attending the Moscow Elementary School would exceed those permissible under Appendix I to 10 CFR Part 50) was heard. Subsequent to that hearing, this school was closed (Tr. 4246-47, 4663). The contention is moot and accordingly we have not made findings on it.

Contentions 7 through 10 and 18 and 19 (pertaining to the City of Cincinnati's water supply) were withdrawn pursuant to settlement between the City and Applicants (settlement agreement of October 30, 1981; unpublished Prehearing Conference Order of November 5, 1981).

Contention 13 (relating to Applicants' financial qualifications) advanced by MVPP, was heard, together with certain Board questions based on it. Subsequently, on March 24, 1982 (47 Fed. Reg. 13750, March 31, 1982) the Commission amended its regulations to eliminate the issue of an electric utility's financial qualifications from consideration in licensing proceedings such as this. The Statement of Considerations for this final rule clearly states the Commission's intention that this rule be applied to pending proceedings. Applicants pointed this out in their proposed findings and subsequently joined in an unopposed Staff motion to dismiss this contention for this reason. We concur with Applicants and Staff. The Commission has clearly indicated that no consideration is to be given to the financial qualifications of an electric utility applicant. Consequently we have made no findings on Contention 13 and hereby grant Staff's motion to dismiss.

MVPP CONTENTION 14 **(Adequacy of Welds on Cable Tray Transition Fittings)**

This controversy stems from a letter written by Mr. Edwin Hofstadter, a former employee of Burndy-Husky (manufacturer of the cable trays) and Miami Valley Power Project's witness, of August 1978, to the Public Interest Research Group. This letter, which prompted NRC's Region III to initiate an investigation, raised concerns about the strength of the materials used to fabricate the cable trays and the competency of the welders who assembled and welded the trays.

In the course of the investigation, Region III inspectors interviewed Mr. Hofstadter in person and by telephone on several occasions. These interviews are detailed in Report No. 50-358/78-21 which is attached to the Staff's testimony on this contention following Tr. 1643.

Contention 14 did not challenge the strength of the materials used to fabricate the cable trays and fittings. Instead, it focused on the qualifications of the welders and the quality of the welds they produced, particularly as they might have been affected by the incentive system employed by Husky. Mr. Hofstadter was Miami Valley's principal witness, although they also offered another witness, Mr. Spieveck, who had visited the Husky plant shortly before the manual welding was begun on the fittings.

Consideration of this contention must focus principally on Mr. Hofstadter's testimony, and some background with regard to his relationship with Husky is therefore appropriate. Mr. Hofstadter was employed by Husky from February 1973 until August 1978 when he was let go apparently as the result of a general directive to Husky from its parent corporation to reduce costs. According to Mr. Hofstadter, his responsibilities generally included performing estimates with regard to new orders, acquiring the necessary tooling and equipment to carry them out, and specifying the processes to be used. As a part of these responsibilities, Mr. Hofstadter was required to obtain the necessary welding procedure qualification records and to ensure that the welders who would weld to these procedures were properly qualified and certified.

Also by way of background, Husky received the order to produce the Zimmer cable trays and fittings in late 1973 or 1974, and the manual welding of the fittings (which is in issue) began in November 1974.

With regard to the qualification and certification of the welders, Mr. Hofstadter's concerns, as amplified on cross-examination, center on two areas: first, that certain welders were tested and certified prior to the qualification of the procedure, and second, that certain welder qualification tests had not been properly witnessed.

The record indicates that standards of American Society of Mechanical Engineers adopted by Husky for the qualification of welding procedures and certification of welders are: (1) The welding procedure must be qualified. Qualification is determined on the basis of a procedure qualification test, which is performed by a welder; (2) A new welder must pass a performance test following the approved welding procedure.

A welder who performs the procedure qualification test, which is approved, also passes his performance qualification test. No work may be done by a welder until both the procedure qualification test and the performance qualification tests have been passed. All parties accept this interpretation.

There is disagreement on whether a welder may take a test to demonstrate his qualification in a new procedure prior to receipt of the results of the procedure test. Applicants and Staff assert that he may, and that he may then be certified on receipt of favorable results from both tests.

MVPP maintains favorable results of the procedure test must be received prior to any test of a welder's qualifications, although this point is not clearly made in its proposed findings.

The Staff's testimony, as well as Mr. Spievack's testimony makes it clear that the welding procedure qualification test need not be completed and approved prior to the testing of the welders who will use that procedure. If the procedure qualification test is satisfactorily completed, welders tested prior to receipt of those results can be certified, assuming their satisfactory completion of their test.

Two welders and the tungsten inert gas (TIG) procedure had not been qualified prior to work on the cable trays as they should have been. However, in light of the routine inspections given the trays, the subsequent qualification of the welders, and the fact that these requirements were imposed by Husky rather than NRC and are not safety related, we do not believe this oversight is significant.

None of the parties addressed Mr. Hofstadter's second concern, the witnessing of qualification tests, in their proposed findings. Examination of the record on this contention indicates that it is not cause for concern.

We have found that the record does not support the allegation that Husky's incentive system promoted bad welding practices. While MVPP's proposed findings on this subject may generally reflect the testimony with respect to the problems which may be posed by attempting to weld at a high rate of speed, particularly if one is not a proficient welder, the record does not support the allegation that these problems in fact occurred with respect to the cable tray transition fittings.

A good deal of testimony was devoted to the safety significance of the cable trays. Mr. Hofstadter's concern stems from his belief that the trays were overloaded. His concern arose from a visit to the station when he observed that the trays were filled, some to the point that they required the addition of side pieces to prevent the cables from spilling out. Mr. Hofstadter was also concerned about the transition fittings which direct the cables from horizontal to vertical. These fittings were the only ones manually welded and hence the ones in issue at the hearing.

We have not made findings with regard to these concerns because we have found that the record does not support the allegation that the cable tray transition fittings were improperly welded. We also note here our conclusion that these concerns are ill-founded.

First, the evidence reflects that the loading of trays is determined by weight, not volume, that the degree of loading is monitored by computer, and that the trays are not overloaded.

Second, the weight of the cables at the point of their transition from horizontal to vertical is not borne by the transition fittings. Rather, it is

borne by the building structure itself. This is accomplished by the use of so-called "Kellum Grips" which attach to the cable on one end and the building on the other. These grips are commonly used by electric utilities. Thus, if the cable trays and transition fittings were to disappear, the cables would remain in place to perform their intended function.

Third, testimony addressed the effect of the breaking of a weld. It was assumed that the weld, when broken, would present a jagged edge which could conceivably cut a cable, particularly if the cable were to jump when energized. However, the testimony established that the cables, being three-phase and bound in the same sheath, will not jump when energized. Similarly, the evidence established that the possibility that a weld might break and cut a cable in the course of some other event, such as a fire or earthquake, was not a hazard. In such an event, the circuit breakers installed on the cables would trip, cutting off the electrical current and preventing a fire.

We hold that the record amply supports a finding in Applicants' favor on this contention.

MVPP CONTENTION 15 **(Dimensions of Control Rod Blades)**

The issues identified in this Contention as well as Contention 16 come from the testimony of Mr. Thomas Dean Martin, a millwright temporarily employed by Reactor Controls, Inc. (RCI), a firm engaged by the Applicants to conduct on-site inspections of control rods and other safety-related equipment. Mr. Martin worked for RCI from May, 1978 until September, 1978. He was assigned the task of uncrating, handling and inspecting control rods after they arrived at the plant. During his inspections he was required to make a number of thickness measurements of the control rod blades and found what he believed to be a failure of the manufacturer to meet design specifications.

The control rods are cruciform in cross-section, formed of four blades at right angles, each nominally 0.280-inch thick. Each blade is a flat package with an outer stainless steel sheath filled with boron carbide (an efficient neutron absorber). Each control rod unit of four blades slides up and down within the water-filled spaces between four control rods; hence the cruciform shape. The rods are supported so they can be inserted freely if desired to create a "scram" or rapid shut-down. Blade thickness is critical only if it exceeds 0.320-inch over a length of one foot. During inspection a clamp is used on oversized rods, to see if they can be reduced to 0.280-inch thickness with a pressure less than 40 pounds per square inch. Such rods will perform properly in service and are acceptable.

About 75% of the control rods Mr. Martin measured exceeded a thickness of 0.280 inches. Later they were remeasured after a clamp was installed at points which exceeded the 0.280 inch thickness. The clamps imposed a 40-pound pressure upon the blade and in most cases brought the thickness below the 0.280 inch limit. Martin may have believed that the procedure of clamping during measurement violated specifications because the blades returned to their original thickness when the clamps were removed. Martin also believed that a second procedure used to test for bowing, which employed a gauge that measured 1-foot long segments of the rods and which permitted a thickness of no more than 0.320 of an inch, was inadequate.

He observed foreign particles on the rods which he felt were not removed by cleaning procedures. He was concerned that these would obstruct free movement of the rods when they were inserted into the core.

Martin believed that all these supposed defects constituted a safety hazard and could prevent safe shutdown of the reactor. He testified that he reported all of these defects to a QA/QC inspector but that corrective action was not taken before rods were installed in the reactor. He also believes that his complaints regarding these defects led to premature termination of his employment with RCI.

In the Board's consideration of Mr. Martin's testimony, we determined that his complaints were ill-founded because (1) he did not understand the basis for the specifications and requirements which must be met by inspections, and (2) he could not correctly appraise the effects of the supposed defects upon the operation of the reactor.

The allegedly improper measurement of high spots with a 40-lb. clamp in place was shown to be a procedure designed to see if the blades had sufficient elasticity to be compressed to the desired 0.280 inch thickness under the pressure they would experience during actual operation and do so without creating undue friction.

There was a basis for some confusion regarding these tests because Mr. Martin was first told to crate rods having a thickness greater than 0.280 inches for return to the manufacturer and later told to unpack the rods and remeasure them with the clamps installed. He may have interpreted this as failure to meet specifications. Staff testimony revealed that clamping was in accord with G.E. procedures. The 0.280 dimension does not represent a maximum design requirement for blade thickness, but rather a checkpoint at which the design engineer wished to be consulted.

Martin's concerns regarding the validity of the testing procedure for bowing using the one-foot long 0.320 envelope gauge were also poorly founded. He apparently did not understand how measurements within the

limits of this gauge permitted only an amount of misalignment less than the water gap (the space between the rod and its containment).

Martin's observation of foreign particles on the control rods was confirmed by the Staff; however, he apparently misunderstood their operational significance. Staff inspectors identified these flecks as material from spot welding. Even if clean-up procedures undertaken after the particles were discovered failed to remove them, there was no basis for Martin's belief that these particles might impede insertion of the control rods. The Staff's opinion, after analysis, was that these flecks posed no operational safety problem even if they were not removed. We find their opinion persuasive.

At the Board's suggestion, the Staff also investigated the possibility that the chamfering of the ledge in the corner of the control rod blades at the top of the velocity limiter might have resulted in metal chips being left inside the control rod blades (Direct Testimony of Federico A. Maura Regarding Metal Chips in Control Rods, following Tr. 3497). The Board concurs in the Staff's opinion that any chips which conceivably were left in the control rod blades do not present a safety concern.

The central issue in this Contention was the on-site clarification of inspection procedures which gave the appearance of a compromise on safety and quality. The Board notes that control rods which deviated from the norm were accepted only after consultation with manufacturers had established that these deviations posed no threat to operations or safety. In the case of six rods which failed to pass the 0.280-inch gauge with the clamp attached, the procedure was clarified to permit the clamp to be placed directly on the high spot. These six rods were then found acceptable. They were later inspected by NRC inspectors on the basis of the clarified procedure and approved. Additionally, functional testing of rod operation will occur during pre-operational testing of the reactor. This should identify any defects impacting safety.

The Board finds that the defects noted by Martin have no operational or safety significance. Contention 15 is without merit.

MVPP CONTENTION 16 (Smoothness of Control Rod Seals)

The issue of Contention 16, like Contention 15, arose from concerns of Mr. Martin during his employment as a millwright at the Station. Martin's complaint in this Contention is with the quality of inspection for smoothness of a section of control rods identified as a seal, but also referred to as a machined surface on the control rod bottom casting velocity limiter. This machined surface is designed to make a metal-

to-metal seal between the rod and its guide tube when the control rod drive unit is removed for repair. At this time, and only at this time, it serves to prevent leakage of radioactive water from the reactor.

Martin testified that he was required to inspect this surface of some of the seals for roughness. He alleges that a smoothness comparator was not used in inspecting about half of the seals; thus they were not properly inspected. He found that the seals he inspected with a comparator did not meet the required standard of smoothness. Thus he concluded the seals did not meet technical specifications and constituted a threat to safety.

The record fails to substantiate Mr. Martin's testimony. Mr. Kananen, a quality control inspector for RCI denied that millwrights played a part in the inspection of these seals. He also testified that he and an associate, Mr. Parla, had inspected all the seals using the comparator and found that all except one, which was scratched, met the required standard.

When questioned about his role in inspection, Mr. Martin's answers left some doubt whether he fully understood (1) the location of these seals on the control rods, (2) the inspection requirements, and (3) the function of the seals in the reactor.

A Staff inspector who had inspected some of these seals testified that use of a comparator was not required in the inspection at the site. The site inspection is designed to reveal possible shipping damage. The seals were inspected for smoothness and correct dimensions prior to shipment. These seals are not designed to be water tight but may allow a small amount of leakage.

As in Contention 15, the Board finds Mr. Martin's claims ill-founded and can see no basis for questioning either the quality of the control rods or their ability to function properly in the reactor.

The Board finds Contention 16 to be without merit.

MVPP CONTENTION 17

(Adequacy of Fire Insulation Materials for Electrical Cables)

This contention concerns the adequacy of the insulation material used to protect electrical cables in the plant in case of fire. These cables are conveyed in trays and the trays are wrapped in insulation material to protect the cables so that they will continue to carry their electrical load in the event of fire. This insulation material is only one of a number of fire protection devices in the plant. Many other protection, prevention and suppression devices and procedures are utilized to lessen the fire hazard to cables.

The insulating material used is a ceramic fiber material manufactured by Babcock and Wilcox under the trade name "Kaowool". Blankets of the

material are wrapped around the cable trays in such a way as to protect the trays from heat for a period of 90 minutes. This time period is considered adequate since the Staff has concluded that most fires could be extinguished within 15 minutes.

The Intervenor, MVPP, did not present evidence on this contention. The tests which provided the basis for the Applicant's claim that this material will provide adequate protection for cables were carried out by Portland Cement Association Construction Technology Laboratory in 1979. These tests utilized cable and cable trays similar in quality and in configuration to those employed at Zimmer. Tests were in accord with ASTM standards and were believed to represent conditions more severe than postulated at Zimmer. The cables withstood the imposed heat without failure of electrical circuits for 90 minutes.

The testing satisfied Staff requirements for protection and qualified the material as a thermal barrier for cable trays. Nothing developed in the record casts doubt upon the adequacy of these tests. The heat generated by the electrical load within the trays and the degree to which the trays were to be filled were taken into consideration but were found to be negligible factors.

We find that Contention 17 is without merit.

Offsite Emergency Planning General Considerations

Offsite emergency planning considerations potentially present situations which may not be well suited to NRC adjudications. It became clear in this case that certain traditional ways of proceeding simply were not applicable because of the differing roles of the Applicants and NRC Staff, the appearance as at least a *de facto* party of the Federal Emergency Management Agency ("FEMA"), and the real if not actively represented interests of the state and local governments.

Offsite emergency planning issues are crucial to the granting of this operating license. Yet they are issues over which these Applicants have little, if any, direct control. Only with respect to the Evacuation Time Study prepared under Applicants' direction and certain communications issues about which Applicants' witness had direct personal knowledge did Applicants' testimony amount to more than a restatement of information already contained in the emergency plans or otherwise readily available. Applicants' witnesses simply did not have knowledge regarding the details and problems of plan implementation raised by most of the contentions.

We mean no criticism of Applicants' witnesses on this score. We fully recognize that while they have a very real interest in these issues, they

have no direct control over them and consequently were not in a position to address the issues in the detail in which they were presented. The following exchange indicates the problem:

- Q [DR. HOOPER] You first made the decision that you were going to have these relocation centers and then decided what the evacuation routes would be, is that your testimony?
- A [WITNESS FICKE] The County selected the relocation centers, yes.
- Q Then you were sort of locked in, so to speak, by the County on your evacuation routes, were you not?
- A Well, they are the county's evacuation routes.
- A [WITNESS BORGMANN] Dr. Hooper, may I make a comment here? Maybe I can shed some light on this. I think maybe there is some misunderstanding as to the utility's role in these plans. We were the catalyst to get the people together, but under this 0654 it's the off-site planner's responsibility — in this case the County of Clermont and the State of Ohio. We were not involved in the selection of evacuation routes or centers or anything else.
- Q Well, I'm just trying to get some information here. I'm not arguing the matter of responsibility. I want to find out some information on how the thing got generated.
- A Okay, I was just trying to explain we were not really involved other than in a coordinating role to see that something was being done which met 0654.

Tr. 5865-66.

Similarly, the NRC Staff, although aggressively represented by counsel, had very little testimony to contribute. Staff offered a transportation expert who testified on his conclusions with respect to Applicants' evacuation time study. Another Staff member addressed the appropriateness of the boundaries of the plume exposure EPZ, and the Director of the Division of Emergency Preparedness, Office of Inspection and Enforcement, testified generally without specifically addressing any of the contentions.

The role usually taken by the Staff was assumed by FEMA. FEMA furnished witnesses who addressed the contentions in prefiled testimony, attended all the hearing sessions, and testified at length.

FEMA's review of the offsite plans was far from complete at the time of the hearing. Its witnesses were no more able to address the contentions than were Applicants' witnesses. Except for a few areas, such as general considerations governing evacuation during floods and similar natural disasters where at least one witness had had extensive prior non-government experience, these witnesses lacked the knowledge and involvement with the

plans which would enable them to address the details and problems of plan implementation raised by the contentions.

Counsel for ZAC-ZACK, in his argument in support of a motion to strike the FEMA testimony, accurately summed up the problem as follows:

Whether we are considering it from the standpoint of the obligations, the duty, the responsibilities, what you will, that [are] imposed upon FEMA by law and their agreement with the NRC Regulatory Commission or we view it from the standpoint of 0654 or what I would suggest would be a combination of them all, these witnesses laid no foundation [for] an opinion and it's to that extent the probative value issue is raised.

Their opinion obviously has probative value if there is some foundation actually for the opinion, not a guess, not a hunch or when I glanced at it and compared it with the guideline, the check list and 0654, everything seemed to be all right.

I don't think we're here for that kind of determination.

Following or flowing from that is if we have no factual basis for the quasi-opinion or the opinion, as you will, for which I deem these individuals to be obligated, then we have no probative value whatsoever to that opinion. We can simply stretch out a number of opinions that look fine to me, it's adequate, it presents reasonable assurance.

We spent a number of days trying to find out how they came to those [opinions] and oftentimes felt we were going in gigantic circles, only to come back to the point of beginning and to constantly engender a constant theme of oh, yes, there is assurance; yes, these are adequate; yes, these are capable of being implemented, but never a single, solitary factor to support that was ever presented.

Tr. 7923-24.

We denied the motion to strike the FEMA testimony on the ground that the objection went more to weight than admissibility. In making our findings of fact, we relied on the FEMA testimony only on the following points: school bus drivers are considered emergency response personnel; volunteers generally tend to respond in emergencies; people generally tend to follow instructions in emergencies; and certain facts regarding water monitoring. Similarly, we note that Staff seemed to avoid relying on FEMA testimony in its proposed findings.

This leaves the testimony of the state and local officials and the Intervenor. The former group of witnesses, although we had requested sponsorship by Applicants and §2.715(c) participants, were presented as Board witnesses, and the emergency plans are Board exhibits.

We found both groups of witnesses to be knowledgeable and forthright, although the breadth of subjects which Intervenor's witnesses could address was necessarily more limited. In making our findings, we have relied primarily on these two groups of witnesses.

The findings address only those contentions on which intervenors submitted proposed findings. Consistent with 10 CFR §2.754(b), we treat those contentions for which ZAC-ZACK has not submitted findings as having been abandoned. This is consistent with ZAC-ZACK's practice in the course of prehearing procedures and the hearing of abandoning contentions which it apparently felt it could not support. There is one exception to this: when a contention was abandoned after Applicants' response indicated that appropriate action would be taken to alleviate the problems identified in the contention, we have included a finding in order to support a license condition.

CONTENTION 20 X
(Portions of Brown County, Ohio, Should be Included in the Plume Exposure Pathway EPZ.)

The Commission's regulations provide that:

[t]he exact size and configuration of the EPZ 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 eastern boundary of the plume exposure EPZ in Ohio is the boundary of Clermont and Brown Counties. At its closest point, this boundary is slightly in excess of ten miles from the station. The record is devoid of any evidence that conditions exist, such as those enumerated in 10 CFR §50.47(c)(2), which would dictate the inclusion of portions of Brown County in the plume exposure EPZ. The Staff's evidentiary presentation on this topic is persuasive (Tr. 6872-76.)

A substantial amount of ZAC-ZACK's efforts with respect to this contention were devoted to showing that the evacuation routes and relocation centers selected by Clermont County to serve the eastern portion of the plume exposure EPZ were inappropriate. As presented at the hearing, the County's evacuation routes were entirely confined to Clermont County, thus ignoring superior routes which lead into Brown County. The selected routes, if followed, bring one to relocation centers in Northern Clermont County, although potential relocation centers exist in Brown County.

ZAC-ZACK was successful with respect to the evacuation routes. As a result of its efforts, the county and state planners adopted additional routes leading through Brown County to the relocation centers in Northern Clermont. These additional routes provide for evacuation radially from the plume exposure EPZ; the original routes provided for evacuation only in a northerly direction. We have adopted a license condition reflecting these additional routes.

ZAC-ZACK was unable to convince these planners of the desirability of establishing relocation centers in Brown County. Although they reconsidered the matter, the state planners did not choose to seriously explore the possibility of using certain identified school facilities in Brown County as relocation centers. The principle advantage of the Brown County facilities is their proximity to Eastern Clermont County; their disadvantages are their increased distance from the source of supply for relocation centers, and the lack of a formal county emergency response organization in Brown County.

While on balance the establishment of relocation centers in Brown County to serve the Eastern Clermont population might be preferable to the existing plan, that plan clearly is not inadequate or incapable of implementation on that score. Consequently we deny Contention 20 X. The contentions originally advanced by ZAC-ZACK which focused on Brown County (which were denied without prejudice to resubmittal in the event ZAC-ZACK was successful on Contention 20 X) are therefore unconditionally denied.

Nonetheless we urge the Ohio planners to again consider the establishment of relocation centers in Brown County if and when Brown County establishes a formal emergency response organization.

**Problems Associated with the Evacuation of Schools in Clermont
and Campbell Counties**

**(Contentions 20(b)(5) & (6); 21(c)(1) & (3), (4); 21(d)(1) - (4);
21(e)(1) - (3); and 36E)**

With regard to the affected Clermont and Campbell County schools, these contentions challenge the adequacy of telephone communications, the adequacy of the number of school buses, and the ability to communicate with the school bus drivers while enroute, and during the period between morning and afternoon routes in order to promptly assemble the buses for evacuation.

The parties and planners all recognize that notification of the affected schools and mobilization of buses to be used to evacuate those schools, should that be necessary, is at present dependent principally on the

commercial telephone system. They further recognize that that system, during an emergency, may not be reliable because of extensive use generally in the affected area and heavy parental calling to the schools. To avoid these problems, those opposing Intervenors' position indicate that: first, notice will be given to the schools prior to notification of the public in order to permit the schools to implement evacuation procedures while telephone service is available; and second, that in the event telephone service is not available, the schools will be notified through NOAA radios and the emergency broadcast system.

The record makes it clear that, once the public is notified of the existence of an emergency, the telephone systems will be overloaded and simultaneously the volume of calls into the schools will increase, further complicating the problem. The emergency plans, in accord with regulatory guidance, all require prompt public notification. All of the population within five miles of the station is to be notified within 15 minutes of the declaration of a site emergency. This leaves too little time to accomplish more than initial notification to the schools prior to public notification, even assuming that no "unusual event" or "alert" had earlier occurred which could lead to extensive telephone use by the public.

Once affected schools have been notified and a decision to evacuate these schools has been made, transportation for the students must be provided. This requires mobilization of school buses and drivers. When not actually transporting students, the buses and drivers are at scattered locations during the day. Plans have not been developed to mobilize the drivers and buses if telephone service is curtailed or eliminated. Nor have plans been developed to deal with the problems presented if buses are in the process of transporting students when the decision to evacuate is made.

Campbell County has two schools within four and one-half miles of the Station. Sufficient buses are available at the bus garage to transport the students at these schools, although sufficient bus drivers are not. The next closest schools in Campbell County are nine miles distant.

In Clermont County, sufficient buses are not available to evacuate all the students in the New Richmond school district within the EPZ simultaneously. Inadequate consideration has been given to this problem.

We cannot find that the Clermont and Campbell County plans are adequate or capable of implementation with respect to evacuation of the affected schools. While the problems outlined above and set forth in detail in the findings are soluble, the solutions must be presented on the record prior to full-power operation of the Station.

Volunteer Services
(Contentions 20(e)(3) - (4), (7) - (8); 36H)

The contribution of volunteers to a number of essential emergency services was the central issue of these contentions. Emergency plans of Clermont County and Campbell County require that volunteers perform a variety of services such as fire fighting, door-to-door verification of notification, access control, medical support, and rescue — these services must be performed in the EPZ after notification of an emergency; thus there may be some risk to personal safety associated with these activities. The plans do not (1) assess the availability of volunteers during hours in which many are employed outside the EPZ, (2) take into consideration possible personal conflicts in the responses of volunteers who have families within the EPZ, and (3) give consideration to the possibility that some volunteers who may perform well in the case of non-nuclear disasters may refuse to participate in a nuclear disaster at Zimmer.

The record is inadequate on the subject of the availability of volunteer personnel. Although a large number of volunteers work outside the EPZ, there are no data on job locations and the time required to travel from their work to join their emergency unit. Some may be close at hand, but others work in Cincinnati and adjoining areas requiring a long travel time. The Board considers this to be a serious but correctable defect.

The record contains a substantial dispute between actual volunteers and their supervisors on one hand and witnesses presented by Ohio, Kentucky, and FEMA on the other as to the performance of volunteers during the stress of an emergency at Zimmer. Some life squad members testified that they would not participate in a Zimmer emergency. Others testified that they would consider performing an emergency role at Zimmer only after they were certain of the safety of their families. On the other hand, witnesses for Ohio, Kentucky and FEMA who claimed substantial experience in non-nuclear emergencies believed that volunteers respond well during disasters despite risks to themselves.

There is little in the record to give guidance on whether the behavior of volunteers would be different in non-nuclear versus nuclear emergencies. We find the testimony of General Buntin and others who have extensive experience in non-nuclear emergencies to be impressive. However, we are also mindful of a substantial amount of direct testimony from actual volunteers which indicated that nuclear events regarded differently and they might not respond at all or would do so only after their family's security had been established.

In the absence of evidence on this matter the Board takes the view that this controversy can be resolved at least in part simply by establishing some guidelines for the screening of volunteers. Data must be assembled on

(1) the work location of volunteers and time needed for response, (2) the number of volunteers with families in the EPZ, and (3) the number who would *not* respond at all to nuclear emergencies. These data would indicate the need to recruit additional personnel to provide adequate response on a 24-hour basis and give some assurances that assigned volunteers can and will in fact respond when needed.

Some of the testimony of volunteers indicated that their training for nuclear disasters had been incomplete or entirely lacking. This must be corrected since most volunteers badly need an understanding of radiation effects and protective actions. An adequate training program might in fact alleviate one of the problems cited above; namely volunteers who refuse to serve in nuclear emergencies. With a better understanding of nuclear events and their associated hazards, they may choose to participate.

Ability of Clermont Population to Follow Instructions (Contention 23(1) and (2))

Here as in the preceding contention the central question is whether the public will react in a responsible manner during a nuclear emergency. Testimony from peace officers and officials within Clermont County indicated that the public often does not take proper protective action even though instructed to do so. They often use poor judgment in emergencies. FEMA witnesses, on the other hand, contend that people generally follow directions well during emergencies.

We conclude that some members of the public may not follow instructions. We also conclude that the knowledge of the local law enforcement officers could be valuable to planners in estimating the amount of time (and hence personnel) needed to perform door-to-door verification of notification. This information should be utilized in connection with the information gained in the survey we require with respect to volunteers.

Transportation Dependent Disabled Individuals - Clermont County (Contention 24(10))

Individuals falling within this category are those who are both disabled and require transportation assistance. They are to be identified through the means of a postcard survey. Several agencies were identified as having responsibility to maintain lists of these individuals. Clermont Association for the Physically Handicapped/Developmentally Disabled (CAPH/DD) has responsibility for providing transportation with assistance from Clermont Authority for Rural Transportation and possibly the Life Squads and National Guard.

Clear responsibility should be assigned for periodically surveying and maintaining of lists of these individuals. Updated lists should be periodically furnished CAPH/DD so that transportation needs can be reassessed from time to time.

Based on the total number of these individuals statistically present in the EPZ (976), CAPH/DD's transportation resources (two buses and one driver) are clearly inadequate. Assistance will be necessary, but the extent of that assistance cannot be predicted in advance of completion of the postcard survey.

We conclude that, once responsibility for surveying and maintaining lists of these individuals is clearly assigned, and transportation needs assessed, that the plan will adequately provide for the protection of this segment of the public.

Monitoring of Farm Products in Clermont County (Contentions 25(3) & (4))

ZAK-ZACK confined its proposed findings on this topic to the problems posed by the necessity for radiological monitoring of goats' milk production in Clermont County. However, for the sake of completeness, we have made findings with respect to monitoring of both goats' and cows' milk.

While we have adopted the proposed finding submitted by ZAK-ZACK with some changes, we do not conclude that problems associated with monitoring of goats' milk during an emergency rise to the level of an inadequacy in the plan or its implementation. We do not mean to belittle this serious problem; we note that the State of Ohio has taken notice of it. However, we conclude that provision for a simple warning to the citizens not to drink their goats' milk will adequately protect the public pending the State's evaluation of the problem. Consequently we find the plans adequate on this point.

Inadequacies in Radio Communication in Clermont County (Contention 20(b)(4))

In their prepared testimony, Applicants indicate that they will provide certain radio equipment which will alleviate problems of "dead spots" in radio communications along U. S. 52. ZAK-ZACK, apparently satisfied with this solution, did not submit a proposed finding on this subject. Because we are incorporating Applicants' undertaking as a license condition, we have made an appropriate finding.

"Circle of Safety"
(Contentions 4(12) & 23(3))

"Circle of Safety," is a pamphlet designed to advise the public with respect to radiological and other emergencies and appropriate protective actions.

In their prepared testimony, Applicants agreed with ZAC-ZACK and Dr. Fankhauser that the publication "Circle of Safety" was too difficult to read. They submitted a revised version with their testimony whose readability had been reduced to the seventh-grade level. ZAK-ZACK then dropped its contention, although Dr. Fankhauser pursued his.

Dr. Fankhauser's witness on this subject, an English Professor from a local college, did not quarrel with the level of readability of this publication. Rather, he took the position that additional information on the nature of radioactivity and the hazards it poses should be made available to those who seek it. Similarly, additional information should be offered with respect to the services available at relocation centers. This witness testified that information such as the availability of sleeping accommodations and decontamination facilities at relocation centers should be included.

We agree that the availability of more information on radiation hazards would be helpful. However, we do not impose a license condition with respect to this matter.

We conclude that the services available at relocation centers need to be better set out in "Circle of Safety". Readers should be informed with respect to the availability of such necessities as food and sleeping accommodations. In particular, readers should be informed with respect to the availability of checks for contamination and decontamination services. We impose an appropriate license condition.

Evacuation Time Study
(Contentions 20(c)(1) - (3), (5) - (9), (10) - (14); 36B, 36C, 36D)

At the hearing much evidence was adduced which goes to the question of whether the Evacuation Time Study had correctly calculated the capacities of the identified evacuation routes. This evidence focused on the attributes of those routes which are relevant to their traffic capacity. Applicants' witness Weiss, who supervised the preparation of the Evacuation Time Study, pointed out that in his opinion, route capacity was not a critical factor in the Study because of the low volume of traffic which the routes would have to carry during an evacuation. We conclude that this opinion is correct. While we have adopted some of ZAC-ZACK's proposed findings because they accurately reflect the record, these findings do not call this opinion into question.

Standard Operating Procedures (Contention 34)

The City of Mentor's Contention 34 asserts that the radiological emergency response plans for both the Commonwealth of Kentucky and Campbell County are invalid because both of these plans state: "During an emergency, Standard Operating Procedures (SOPs), developed from the plan, will be employed to respond to the emergency rather than this planning document" (Board Ex. 3, Plan Organization, at vi; Board Ex. 5, Basic Plan, Appendix 8, at VII-8-1). Although the Board chose to accept testimony on this contention at the hearing, we have determined that Mentor's challenge to the validity of the Kentucky and Campbell County plans should be addressed as a question of law.

The Staff proposes that we dismiss Mentor's Contention 34 as an impermissible challenge to the validity of 10 CFR Part 50, Appendix E, and 10 CFR §50.47. However, Section 50.47 makes no mention of implementing procedures or SOPs. The Staff's argument is that "10 CFR Part 50, Appendix E, Section V specifically requires implementing procedures (SOPs) for onsite emergency plans and, by analogy, for all emergency plans."

We view this section as merely a filing requirement which specifies the dates by which an Applicant must file three copies of any implementing procedures for its *on-site* emergency plans. Hence we do not agree with the Staff's assertion that we can utilize these requirements regarding on-site planning in interpreting the requirements of Section 50.47 as they relate to off-site plans developed by States and counties. We find Staff's argument that NRC regulations require the use of SOPs to lack merit.

We similarly find Mentor's argument that the Kentucky and Campbell County plans are invalid because of their utilization of SOPs lacks merit. NUREG-0654 provides, at 29:

The guidance does not specify a single format for emergency response plans but it is important that the means by which all criteria are met be clearly set forth in the plans. . . . Applicable supporting and reference documents and tables may be incorporated by reference, and appendices should be used whenever necessary. The plans should be kept as concise as possible. The average plan should consist of perhaps hundreds of pages, not thousands. The plans should make clear what is to be done in an emergency, how it is to be done and by whom.

As stated by the Kentucky planners, their purpose in choosing to use SOPs was as a means of providing "additional guidance or specialized functions which have markedly differed from those which are normally

conducted" (Tr. 6134; cf. NUREG-0654, §II p.7, p.79). This appears to be in accordance with NUREG-0654's guidance that plans are to be kept as concise as possible and that documents may be incorporated by reference. Contention 34 is therefore dismissed.

**Plan for Indiana Ingestion Exposure EPZ
(Contention 35)**

Contention 35 asserted that there is no Indiana radiological emergency response plan for the portions of the Zimmer Station ingestion exposure pathway located in that state. This contention alleged that the absence of such a plan endangered the health and safety of the citizens of Mentor. Testimony at the hearing indicated that such a plan existed.

Early in the hearing, the Board had occasion to note that, pursuant to 10 CFR §50.33(g), Applicants are obliged to file the Indiana plan. They did so after the close of the record. Later in the hearing, in response to Mentor's frustration at the fact that the FEMA witnesses had no knowledge of the plan, the Board indicated that Mentor might file an appropriate motion or a proposed finding. The Board expected that, at some point after testimony on the first hearing day indicated the existence of the Indiana Plan, a motion would be forthcoming seeking to pursue its adequacy. However, none was filed and we are left with the situation that that point was never placed in issue. Consequently, faced with a contention which asserts the absence of a plan and uncontroverted testimony to the contrary, we must deny the contention.

**Public Notification System
(Contention 36I)**

The record indicates that the prompt notification system will comply with the applicable regulatory requirements. We do not agree with Mentor that it is significant that testing of the system is to occur after the close of this record. In nuclear licensing cases, it frequently happens that the adequacy of certain systems is litigated in advance of operational testing; this particular system has not been shown to warrant different treatment. Any deficiencies revealed by the operational tests will be corrected prior to operation.

While we recognize that the Mayor of Mentor has the option of joining the EOC organization and has the authority to order an evacuation of Mentor, we hold that the absence of a means of notifying the Mayor, in addition to the commercial telephone and prompt notification system, does not result in any inadequacy in the Campbell County plan.

Monitoring Kentucky Water Supplies (Contention 36K)

The citizens of Mentor contend that the Campbell County plan does not adequately address the problem of monitoring water supplies in the case of an emergency at Zimmer. Responsibility for monitoring and regulating water supplies lies with the Kentucky Department of Natural Resources and Environmental Protection and this agency has developed procedures for collecting and analysis of water samples in the event of an emergency. These procedures are adequate.

Municipalities whose water supplies come from the Ohio river downstream of the Station are a sufficient distance away from the Station so that ample advance notification of river contamination identified by monitors at the Zimmer site can be given. Intakes from the river can be closed thereby protecting stored supplies of water from contaminated river water. Plans also call for monitoring of contaminated ground water, cisterns and other surface supplies.

In general the procedures that have been established for monitoring seem to be both timely and adequate for protection of the public. There are adequate procedures for notification of the public and state agencies of contamination. The record fails to identify any serious deficiencies in the Campbell County plans for water monitoring. We conclude that the plans are adequate.

Relief

As set out above and in the findings of fact, the record in this case reveals a number of deficiencies in offsite emergency planning which must be corrected. We conclude that they must be corrected prior to operation of the Station at power levels in excess of 5% of rated power. The applicable regulation does not specifically address this point; it requires that no operating license is to be issued unless a finding is made that there is reasonable assurance that adequate protective measures can and will be taken in the event of an emergency (10 CFR §50.47(a)(1)). The regulation goes on to provide, in subsection (c)(1), flexibility to permit operation even though all of the requirements of the regulation have not been met.

In subsection (c)(1), the Commission's clearly stated intent is to permit operation whenever identified deficiencies are not significant. We hold that the deficiencies identified in this record are not significant in the context of low power operation at levels not in excess of 5% of rated power. We base this holding on the fact that, in pursuing their contentions, Intervenor

consistently followed the "worst case" scenario put forward by NUREG-0654. This scenario is not a possible occurrence at power levels of less than 5% a fact recognized by the Commission in promulgating a proposed rule which would formally eliminate low power licenses from the planning requirements of Section 50.47.

A more difficult question is whether the deficiencies are amenable to correction through a license condition, or whether further on the record proceedings are necessary. The Staff presented the Director of the Division of Emergency Preparedness, Office of Inspection and Enforcement on this point. His constantly recurring theme with respect to this question was summed up as follows:

The deficiencies identified in the plan, which are related to the contentions, should have clear courses of action identified to remedy those deficiencies. These courses of action should be fairly straightforward in nature and likely to result in correcting the deficiencies.

With this kind of corrective action plan in place, a finding of reasonable assurance on the state of emergency preparedness can be made with respect to those areas in contention, conditioned on the deficiencies being fixed before operation, or before full power is permitted by the Staff.

Tr. 7394.

We agree with this statement to the extent that, when clear courses of corrective action are present, deficiencies may be corrected by means of a license condition. The statement does not address the situation when clear courses of action are not present. In that situation, further proceedings are necessary with respect to the identified deficiencies. This is consistent with Commission precedent.

The Commission has stated in a similar context:

Our review of the plant security and freezer-dryer issues leads us to discuss the procedure whereby licenses issue after adversary proceedings, while certain issues are left for the staff to resolve following the hearings. As a general proposition, issues should be dealt with in the hearings and not left over for later (and possibly more informal) resolution. See this Commission's decision in *Wisconsin Electric Power Co.* (Point Beach Unit 2), RAI-73-1, p. 6 [CLI-73-4, 6 AEC 6 (1973)]. In some instances, however, the unresolved matter is such that Boards are nevertheless able to make the findings requisite to issuance of the license.⁸ But the mechanism of post-hearing resolution must not be employed to obviate the basic findings prerequisite to an operating license—including a reasonable assurance that the facility can be

operated without endangering the health and safety of the public. 10 CFR 50.57. In short, the "post-hearing" approach should be employed sparingly and only in clear cases. In doubtful cases, the matter should be resolved in an adversary framework prior to issuance of licenses, reopening hearings if necessary.

⁸ For example, a Board might, after hearing, find an applicant's security plan adequate, except for minor procedural deficiencies. In such a case, the Board could choose to authorize issuance of a license—with the deficiencies to be subsequently cured under the scrutiny of the Director of Regulation.

Consolidated Edison Company of New York, Inc. (Indian Point Station, Unit No. 2) CLI-74-23, 7 AEC 947 at 951-2 (1974); cf. *Public Service Company of Indiana, Inc.* (Marble Hill Nuclear Generating Station, Units 1 and 2) ALAB-461, 7 NRC 313 at 318 (1978); *Metropolitan Edison Company* (Three Mile Island Nuclear Station, Unit No. 1), Docket No. 50-289, unpublished order dated March 23, 1981, at 6-7. Applying the above precedent to the facts of this case, we hold that the deficiencies identified with respect to the availability and responsibility of volunteers, the transport of disabled individuals, inadequacies in radio communications, and in the publication "Circle of Safety" all have clear courses of corrective action. We have therefore adopted license conditions to deal with these deficiencies.

Two problems remain. The first of these pertains to evacuation of the Clermont and Campbell County Schools. Our findings reflect the complexity of this problem. Were we to adopt a license condition to deal with this deficiency, we would be forced to dictate a solution to the problem. This is wholly inappropriate. We are charged with making findings with respect to the adequacy of plans, not writing plans. Nor could we effectively discharge the responsibility of writing plans. This must be accomplished by the state and local officials who are intimately familiar with the situation. While we are confident that solutions to this problem are available, these officials are aware of the advantages and disadvantages of the various solutions and hence able to arrive at the optimum solution. Further proceedings are necessary on this issue before we will authorize the issuance of an operating license.

The second problem involves the so-called final FEMA finding. This case proceeded to hearing in advance of this finding in order to accommodate Applicants' projected fuel loading date of July, 1982. Immediately following the hearing, the Applicants advised that their projection had slipped to December, 1982.

In order to accommodate Applicants' fuel load date, ZAC-ZACK and the City of Mentor complied with rigorous schedules without complaint,

and proceeded to hearing only to find that FEMA was unprepared to address their specific contentions.

These contentions (ZAC-ZACK's were conditionally admitted in July 1980) were specified in voluminous detail on November 12 and 13, 1981 and formally admitted on November 25, 1981, two months prior to hearing. These intervenors did not follow the pattern often followed by intervenors opposing the licensing of a plant. Delay clearly was not objective. The contentions themselves represent the sincere concerns of the community, concerns which we have found in many instances to be well founded. Throughout this proceeding many points raised in the contentions were found to require some action or further consideration by the Applicants and the state and local planners. For example, Applicants' response to contentions on the publication "Circle of Safety" and inadequate radio communications has been detailed. The State of Ohio has agreed to review certain questions of state law raised by ZAC-ZACK. It has also indicated that certain testimony filed by ZAC-ZACK has exposed problems which, if cleared up, will immensely benefit the entire state (Tr. 5141). And it has revised the Clermont County evacuation routes.

Given this situation, this Board is appalled by the inability of FEMA to respond to the contentions. These citizens deserve far better from the government agency with responsibility to protect them than they have received.

In considering appropriate relief, we are reminded of the basis upon which Applicants urged hearing the contentions in advance of the final FEMA finding:

Certainly, as we have emphasized both prior to this hearing and, I believe, last week and perhaps even this week, that if there are significant new developments, first the Applicants or the Staff or FEMA, as appropriate, would have to bring that to the attention of the Licensing Board and the parties, and that 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.

We will not authorize an operating license for this facility until at least so much of the final FEMA findings that relate to the contentions admitted on November 25, 1981, and the Staff's supplement to the Safety Evaluation Report related to those findings, have been filed and served on the parties and the parties have had a reasonable opportunity to assess their impact on the admitted contentions and this Initial Decision.

In making the findings of fact and conclusions of law which follow, the Board considered the entire record of the proceeding and all of the proposed findings of fact and conclusions of law submitted by the parties. Each of the proposed findings of fact and conclusions of law which is not incorporated directly or inferentially in this Initial Decision is rejected as being unsupported in law or fact or as being unnecessary to the rendering of this decision.

FINDINGS OF FACT

Contention 14 MVPP

Cable trays containing electrical wires have been inadequately welded by improperly qualified welders, contrary to NRC regulations. More specifically, three piece verticals and two piece channels were welded by people not fully ASME certified. These welders were not consistently able to produce a quality weld with good fusion, a situation aggravated by Husky Product's incentive system which induced quick blasting techniques to be employed. Further disregarding standard procedures production welding techniques and test welding techniques were not identical. Any meaningful inspection of the crucial three piece vertical welds is impossible because the trays have been galvanized. Therefore, the existing system of cable trays must be dismantled and a new set, welded by fully certified welders, installed.

1. At the Zimmer Station, cable trays are utilized to separate and direct the routing of electrical cables (necessary to the proper functioning of the station). Support for both the electrical cables and the cable trays is provided by seismically designed hangars, attached to the structure. The trays, therefore, are not essential to support the electrical cables. (Vandel and Wescott-Cable Tray Welding fol. Tr. 1643 at 8 [hereinafter Staff Cable Tray Testimony].)

2. Cable trays used in the Zimmer facility were manufactured by Burndy-Husky Incorporated of Florence, Kentucky, and consist of three types of trays. First, a three piece straight tray used horizontally, having two side channels welded to a corrugated bottom plate. Second, a three piece vertical tray utilized in straight vertical runs having two side channels welded to a flat plate for the back of the tray. These trays are welded by an automatic resistance spot-welding machine. Third, fittings to provide transition of cable routing from horizontal to vertical known as T-sections. These transition trays may have either single piece side channels or three

separate pieces joined by manual welding, utilizing the tungsten inert gas (TIG) process. The fillet welds are approximately one-inch long and are spaced every two to three inches along the welded joint. These side channels are then spot welded to a corrugated solid bottom plate. This welding is done by either a resistance spot welding machine or by semiautomatic metal inert gas (MIG) process as necessary (Staff Cable Tray Testimony at 7-8).

3. Cable trays for the Zimmer Station were manufactured in accordance with a quality assurance (QA) program approved by the Applicants (Tr. 990, 1104-05). Cable trays at Zimmer are not required to be ASME Class 1 (Tr. 1097), and there is consequently no requirement for "certification" of welders. Nonetheless, each Husky welder was required by the QA program to have a qualification test to establish his competence for the type of welds made on Zimmer cable trays (Banta, Borgmann & Schwiers - Cable Tray Testimony fol. Tr. 985 at 1 [hereinafter Applicants' Cable Tray Testimony]; Tr. 987). As a separate matter, the welding procedure used on the cable trays also had to be qualified (Tr. 1759-61).

4. Each welding procedure and each welder therefore should have undergone a prior qualification test required for each position and process involved in the production of the cable tray transition fittings. An internal audit by Burndy-Husky revealed that the TIG procedure and two welders had not been so qualified. These welders were qualified in August 1975 and March 1976. They had welded transition fittings sometime during 1974. (Tr. 1044-45; Staff Cable Tray Test. at 11; Tr. 1767.) Their welds were subjected to Husky quality control (QC) procedures (Tr. 1091-92).

5. The evidence does not support the allegations that the welders were not consistently able to produce a quality weld with good fusion.

- a. NRC's Chicago Office of Inspection and Enforcement investigated these allegations (Staff Cable Tray Test., Region Report No. 50-358 [78-21]).
- b. Staff destructively tested some MIG spot welds on randomly selected fittings. All were found to be acceptable (*Id.* at 11-12).
- c. Staff did not knowingly destructively test TIG welds (Tr. 1703), although some TIG welds may have inadvertently been subjected to the same destructive test as the MIG welds. In this test only MIG welds failed (Tr. 1749, 1762-63, 1774). Staff visually inspected TIG welds on fittings installed at the site and found that they appeared sound and suitable for their function (Staff Cable Tray Test. at 12). This inspection was carried out after the fittings had been galvanized (Applicants' Cable Tray Test.; Tr. 1106), so that this inspection would probably spot gross defects, but not lesser faults such as pin holes, porosity, and hairline cracks (Staff Cable Tray Test.; Tr. 1745)

d. TIG and MIG welds were inspected at Husky prior to shipment pursuant to Husky's inspection program (Applicants' Cable Tray Test.; Tr. 1032-33, 1070, 1085-86, 1092, 1814). Welds were subjected to another inspection on arrival at the Zimmer site to assure that there was no damage in shipment and that the welds were acceptable. Upon installation of the trays and fittings, welds were again inspected. Inspections at the site occurred after galvanization (Applicants' Cable Tray Test.; Tr. 1099, 1102).

6. The allegation that Husky's incentive system led to improper welding practices is not supported. The incentive system rewards a welder for increased acceptable production; he benefits by decreasing the time it takes to gather and assemble the parts for welding as well as by decreasing welding time. However, production of bad welds results in a deduction from a welder's incentive earnings. Continued unacceptable production can result in reprimands and eventually disqualification (Tr. 1081-85). There has been no showing of bad welds on the Zimmer cable trays and fittings (Tr. 1224, 1416).

CONTENTION 15 MVPP

Control rods which must be easily inserted into and removed from the reactor core have been inadequately manufactured so that they do not meet the site specifications for such control rods.

7. The control rods perform the dual function of power shaping and reactivity control in the reactor core. Power distribution in the core is controlled during operation of the reactor by manipulating selected patterns of control rods. In the event it is necessary to quickly shut down the reactor (scram), withdrawn control rods must be quickly inserted into the core.

8. The control rod consists of a sheathed cruciform array of stainless steel tubes filled with boron-carbide powder. The main structural member of a control rod is made of Type 304 stainless steel and consists of a top handle, a bottom casting with a velocity limiter and control rod drive coupling, a vertical cruciform center post, and four U-shaped absorber tube sheaths, known as blades, which give the rod its distinctive cruciform configuration. The top handle, bottom casting, and center post are welded into a single skeletal structure. The U-shaped sheaths are resistance-welded to the center post, handle, and castings form a housing to contain the boron-carbide-filled absorber rods. Rollers at the top and bottom guide the control rod as it is inserted and withdrawn from the core. When in the core, each control rod is surrounded by four fuel assemblies. The control rods are cooled by the core bypass flow. The blades are perforated to allow

the coolant to circulate freely about the absorber tubes (Appl. Exh. 1, Final Safety Analysis Report [hereinafter "FSAR"] at §4.2).

9. The control rods were manufactured at General Electric Company's plant in Wilmington, North Carolina. Before shipment, control rods were inspected pursuant to General Electric's quality assurance procedures to assure that design specifications were met (Pence Testimony on Manufacture of Control Rods, following Tr. 2209 [hereinafter "Applicants' Control Rod Testimony"] at 1).

10. Procedures to determine whether to accept control rods are set by the manufacturer. These include use of a 0.280-inch envelope gauge to determine if the control rod blade thickness at any one point exceeds 0.280-inches. Also, a one foot long 0.320-inch envelope gauge is used to determine if bowing exists over a wider area (Maura Testimony on Control Rod Thickness and Seals fol. Tr. 1643 [hereinafter Staff Control Rod Testimony] at 3-4). The 0.280 dimension did not represent any maximum design requirement for sheath thickness, but a checkpoint at which the design engineer wished to be consulted (Staff Control Rod Testimony at 7; Tr. 2651-53).

11. In accordance with the GE inspection procedure, a 40-pound per square-inch pressure clamp is placed adjacent to any high spots identified by the 0.280-inch envelope gauge (Tr. 2409-10). The purpose of the clamp is to determine if the high spot is flexible, and to ensure the absence of foreign matter between the sheath and the poison rods which form the blade (Staff Control Rod Testimony at 4).

12. While certain damage such as significant dents or bent rods could be a reason for rejection, normal waviness which is overcome by the clamp is acceptable (Tr. 2253-54; 2416-17).

13. During the initial site inspection of the 137 control rods, 86 did not pass the 0.280-inch envelope gauge (Staff Control Rod Testimony at 4; Tr. 2247). Of those 86 that did not pass, 4 also did not pass the 0.320-inch gauge and these four control rods were rejected (Staff Control Rod Testimony at 4). Additionally, one of the remaining 82 rods was rejected because it obviously had been hit with something (Tr. 2279, 2286-7). Seventy-five of the remaining 81 rods were found acceptable after clamping; six were not (Staff Control Rod Testimony at 4). These six were ultimately accepted after the GE procedure was clarified to indicate that the clamp could be placed directly over the high spot and the surface area of interest on the blade was redefined; such modification resulted in readings of 0.280 inches or less. Because it had questions concerning this modification, Staff requested a reinspection of these six rods which Staff witnessed. Reinspection disclosed no problems (Staff Control Rod Testimony at 4; Tr. 2285-6).

14. The control rod is designed to operate with rubbing friction between the control rod and the fuel bundles which is substantially in excess of forty pounds. Therefore, the fact that a forty pound inspection clamp load was necessary in order for 81 rods to pass the 0.280-inch gauge has no implications for operation (Applicants' Control Rod Testimony at 2; Tr. 2324). Because of elasticity of the control rod blade and fuel channels, the blade thickness could be increased above 0.280 inches without encountering operational difficulty. (Staff Control Rod Testimony at 7; Tr. 2385-87, 2436-37). In any event, any abnormal friction would be found during preoperational and operational testing of the control rods and control rod drives (FSAR §§ 4.2.3.2.4.3, 4.2.3.2.4.4, 4.2.3.2.4.5 at 4.2-59 through 61; Staff Control Rod Testimony at 7; Tr. 2645-49).

15. During the course of handling the control rods, particles of material were discovered in the connection between the sheath and the center structural member of the control rod (Martin Testimony fol. Tr. 2449 at 3; Tr. 2296-7, 2308-09, 2312-13, 2419). A cleaning process was initiated utilizing compressed air, vacuum cleaners, probes and other methods to dislodge the particles. The rods were wiped down with a degreasing agent (Tr. 2296-7, 2308-9). The particles, which had a maximum size of 1/16 inch by 1/8 inch and which were extremely thin, were determined to be the result of a spot welding process (Tr. 2309-12, 2438). If some particles were not removed and escaped during operation, filters on individual pieces of equipment and the cleanup system would remove them (Tr. 2358-59, 2420). These particles pose no safety problem.

16. In January 1979, during initial fuel loading at the Fukushima 6 reactor (Japan) it was noticed that several fuel channels hit the small ledge that exists in the corner of the control rod blades at the top of the velocity limiter just before the fuel bundle seated on the orificed fuel support. Under certain circumstances, this ledge could nick the corner of a fuel channel. Nicking would not affect fuel channel, control rod life, or reactor safety. Nonetheless, this ledge on certain of the control rods in question was chamfered to eliminate the possibility of nicking (Tr. 2315-16, 2318). The chamfering was done with a handheld high speed air motor driving a small milling tool (burr). Control rods were selected for chamfering by utilizing a gauge which duplicated the fuel channel corner. All corners of all control rods ultimately passed the gauge (Applicants' Control Rod Testimony at 2-3). The chamfering procedure used assured that particles could not get into the control rod as happened in connection with spot welding (Tr. 2421). At that time the rods were again visually inspected and randomly checked with micrometer and gauge (Tr. 2658, 2676). This disclosed no rejectable control rod blades (Tr. 2658-59).

Contention 16 MVPP

Almost all of the seals on the control rods, which when properly set prevent radioactive water from leaking out when the reactor is shut down for maintenance, do not meet minimum specifications for smoothness. Rough seals cannot set properly, making servicing more difficult and unnecessarily endangering workers and the general public by causing leakage of radioactive water.

17. During operation, the primary seal which retains water in the reactor is that created by the mating of the surfaces of the control rod drive and control rod drive housing flanges. Contention 16 is concerned with the velocity limiter to guide tube backseat seals which serve to limit the leakage of water from the reactor vessel during the time when the control rod drive mechanism is disassembled for maintenance and the reactor is shut down (Pence Control Rod Seals Testimony, following Tr. 2209 [hereinafter "Applicants' Control Rod Seal Testimony"] at 1; Staff Control Rod Testimony at 8; Tr. 2745-46, 2766-67).

18. The specifications for the seals, which are AISI Type 304 stainless steel, call for a 63 RMS finish and dimensional constraints in size and shape (Applicants' Control Rod Seal Testimony at 1).

19. These are not perfect metal-to-metal seals and a small amount of leakage is to be expected. Once the drive is removed, if necessary, a blind flange can be installed on the control rod drive housing to deal with leakage. This small leakage in no case creates an operational or personnel radiological safety problem (Staff Control Rod Testimony at 8-9; Tr. 2746, 2763-64, 2765-66).

20. To determine that the specifications were met, all control rod seals were subjected to visual inspection with a comparator and a dimensional check in a special inspection fixture. These inspections were performed at Wilmington as part of General Electric's Quality Assurance Program (Applicants' Control Rod Seal Testimony at 1-2).

21. The seals were again visually inspected with a comparator at the Zimmer site for possible damage in shipment (Tr. 2742). One control rod was rejected because of a scratch across the seal surface (Applicants' Control Rod Seal Testimony at 2; Staff Control Rod Testimony at 8).

Contention 17 MVPP

Fire insulation material which is being used to protect the cables in the cable trays from fire is inadequate to protect the cables in light of the cable tray installation design and cable tray load. The

tests of the fire insulation material were improperly performed in that conditions which will exist during operation were not adequately simulated.

22. The Applicants proposed to use a ceramic fiber blanket thermal insulation material manufactured by the Babcock and Wilcox Company under the trademark name "Kaowool" as a protective insulation material to be wrapped around selected cable trays which the Staff has concluded need additional fire protection (Harrison, Cohn, & Barnes - Kaowool as a Fire Barrier for Cable Trays fol. Tr. 3244 [hereinafter Staff Fire Protection Testimony] at 8; Tr. 3245-46; Appl. Ex. 7A at 4 and Appendix A.2). Applicants will cocoon all cable trays requiring additional protection with three one-inch layers of Kaowool, giving each tray a 90 minute fire rating (Cotta Affidavit following Tr. 3414 at 2; Tr. 3245-46, 3377-78, 3425). The 90 minute fire rating provides for extreme conservatism inasmuch as the Staff has concluded that it would not take more than 15 minutes to detect and extinguish a fire at Zimmer (Tr. 3278, 3378).

23. To qualify Kaowool as a thermal insulation material, the Applicants rely on a test conducted by the Portland Cement Association at Construction Technology Laboratories ("CTL") on June 6, 1979. Four 16 foot cable tray sections were used in the test. Seventy EPR insulated, seven conductor Hypalon jacketed IEEE 383 Grade control cables were placed randomly in each tray, constituting a 40% fill (Applicants' Exh. 7A at 5-6; Tr. 3420-22; Cotta Affidavit at 2). These cables were chosen because they are the most susceptible to an outside fire (Tr. 3421). These cable trays were insulated with a three-inch Kaowool blanket (App. Ex. 7A at 8).

24. The trays were then placed horizontally in the CTL beam furnace (Applicants' Exh. 7A at 13). Furnace atmospheric temperatures were programmed to follow time-temperature relationships specified in ASTM E119 (Applicants' Exh. 7A at 13). Eight shielded thermocouples protected in accordance with the requirements of ASTM were used to measure and control furnace atmospheric temperatures (*Id.* at 13). Average furnace atmosphere temperature was controlled with a 1.5% variation from the standard time-temperature curve throughout the test (*Id.* at 14).

25. Electrical continuity of 15 cables at the bottom, sides, top and middle of each tray position, known to fail first, was monitored by observing lamps in a panel that were wired to conductors in each cable. Short circuits from the outer conductors to the center conductor within each cable were monitored (App. Exh. 7A at 1, 8, 12; Tr. 3301-04). The first short-circuit occurred at 94 minutes (*Id.* at 15).

26. The Applicants have imposed a heat generation limitation on all Kaowool-wrapped cable trays of 13 watts per foot (Tr. 3422-25, 3560-62,

3599). This internal heat could hasten cable failure by about 1 minute 20 seconds (Tr. 3422-23).

27. The ASTM test is an extremely severe fire test (Tr. 3280-81, 3301), more severe than any potential spot fire at Zimmer because it involved complete engulfment of the bottom two trays in a flame atmosphere (Tr. 3316, 3451-52). The trays were wrapped in the same manner as those installed at the Zimmer station (App. Exh. 7A at 8, Appendix A and Figures 1-14; Tr. 3316; Cotta Affidavit at 2). The trays were positioned in the furnace to simulate to the extent possible the configuration of trays at Zimmer (Tr. 3451-57). A change in the positioning or number of the trays in the furnace would not have any significant effect on the test results (Tr. 3449-51, 3456). The testing of trays in the horizontal position is sufficient also to qualify similarly insulated vertical cable trays installed at the plant (Tr. 3314-16).

**Brown County, Ohio, Should Be Included in the
Plume Exposure Pathway EPZ
(Contention 20X)***

28. Brown County does not have an emergency response plan. It plans to establish a County Disaster Service Agency and retain a director, who may be a volunteer. At present, the Brown County Sheriff's office is responsible for relaying information concerning a Zimmer emergency to a commercial radio station located near Georgetown, Ohio, for broadcast to the County population. (Tr. 4979, 7899-7907.)

29. The western boundary of Brown County is 10.04 to 10.6 air miles from the Zimmer Station; the closest point is 10 miles, 762 feet (Tr. 4972-73, 5832-33). This boundary constitutes the eastern boundary of the plume EPZ extending from the Ohio River to S.R. 125 (Staff Ex. 11).

30. The population of the eastern half of the plume exposure EPZ in Clermont County (Sectors NNE, NE, ENE, E, ESE; 1980 census data) is 13727 (Staff Ex. A, Attachment to Feb. 12, 1982, letter from Borgmann to Denton, Fig 2, p. 16-17). The Brown County population within 15 miles of the Zimmer Station is 3587 people, including two incorporated villages: Higginsport, approximately 343; and Hamersville, approximately 688 (Applicants' Ex. 15 [hereinafter App. Test.] at 2; Tr. 5831). The topography of the adjacent areas of Brown County and Clermont Counties is similar, rising from approximately 520 MSL (at the Zimmer Station) to 800-900 MSL within one to three miles. Within 15 miles of the Station

* Because of their length, the offsite emergency planning contentions are not set out with these findings; rather they are attached as Appendix C.

the terrain is hilly, fluctuating between about 550 and 950 ft. MSL. (App. Test. at 3; Tr. 6872-6875.)

31. The Clermont County Radiological Emergency Response Plan provides evacuation routes for the eastern portion of Clermont County which proceed from Zimmer Station on U.S. 52 to its junction with S.R. 133, then on S.R. 133 to S.R. 125, with alternate routing from S.R. 133 via S.R.'s 222 and 232 to S.R. 125. This routing is entirely within Clermont County. (Board Ex. 2, p. II-I-18). During the course of the hearing, this routing was altered by the State of Ohio and Clermont County to provide additional evacuation routes from Clermont County through Brown County to relocation centers in northern Clermont County utilizing U.S. 52 to U.S. 68 and U.S. 62 to S.R.'s 32 and 125, S.R.'s 756 and portions of S.R. 505, and S.R. 747 to S.R. 125 (Williams Test. fol. Tr. 7766 at 2; Tr. 7769-71, 7785-6).

32. The most direct evacuation routes out of the EPZ for Clermont County residents situated east of the Zimmer Nuclear Power Station are U.S. 52, S.R.'s 756, 774, and Sodom Road (Wesseler Test. fol. Tr. 5256 at 3; Tr. 7769).

33. U.S. 52 is a superior roadway to S.R.'s 133, 222 and 232. S.R. 133 is a steep, winding, hilly and narrow roadway. U.S. 52 is generally flat and straight, and about twice the capacity of S.R. 133 (Wesseler Test. fol. Tr. 5256 at 2; Tr. 5288-89.)

34. The Ohio State Patrol Post in Georgetown, Ohio, and the Brown County Sheriff will provide access control points and traffic control on roads and highways in Brown County. The record does not reflect the details of this commitment nor whether state patrolmen assigned to the Georgetown Post are committed under the existing plan for deployment in Clermont County or retention in Brown County, or both. (Wesseler Test. fol. Tr. 5256 at 3; Williams Test. fol. Tr. 7766 at 2; Tr. 7902-3; Board Ex. 1, V-7.)

35. The distance required to be traveled by Clermont County evacuees from the Clermont-Brown County boundary through Brown County to arrive at a relocation center in Williamsburg, Clermont County, Ohio, is from 37 to 50 miles (Tr. 7788).

36. Individuals leaving the plume exposure zone may in many cases go to friends' homes or some other location and not to a relocation center. Approximately 20% of a evacuating population will proceed to a relocation center. Contaminated individuals departing the EPZ may contaminate other persons in other areas. If the possibility of contamination exists, individuals would be advised to report to a relocation center through the media. (Tr. 4991-2, 5202-03, 7791-93.)

37. The Villages of Higginsport and Ripley in Brown County are approximately seven and 12-14 miles, respectively, from the Clermont-Brown boundary on U.S. 52 and each have school facilities. Western Brown High School facility is located in the Village of Mt. Orab and Hamersville School is located on S.R. 125. Respectively, these facilities are approximately 10-12 miles and approximately three miles from the Brown County line. (Wessler Test. fol. Tr. 5256 at 2; Tr. 5276.) Each has a cafeteria and capability for providing shelter and sleeping facilities (Tr. 5269-70, 5279-80). All presently designated relocation centers are school buildings (Tr. 4992). There is no evidence that Brown County school facilities could not serve as relocation centers (Tr. 7781-83). However, substituting these facilities for existing centers would entail longer supply routes because supplies (furnished by the Red Cross) originate in Cincinnati (Tr. 7795). One relocation center is located in Hamilton County (Tr. 4992-3), and is located on superior roadways leading to that center (Tr. 5871-72)

38. After its initial testimony, the State of Ohio again reviewed its decision not to establish relocation centers in Brown County and adhered to it (Williams Test. fol. Tr. 7766 at 1; Tr. 7784-85, 7795). It is the state's position to permit the county government to determine how to care for its citizens (Tr. 4973, 4993). If the county government cannot provide adequately for the relocation of its citizens, the state policy is that the county immediately adjacent to the involved county shall plan to provide for relocation centers for individuals coming from the county in which the plant is located (Tr. 4973). Brown County may choose to establish such centers (Tr. 4994). In that event the state government would act to insure that efforts of the individual county disaster service agencies and respective county governments are well coordinated (Williams Test. fol. Tr. 7766 at 1; Tr. 4973).

**Problems Associated with the Evacuation of Schools
in Clermont and Campbell Counties
(Contentions 20(b)(5) & (6);
21(c)(1)&(3), (4); 21(d)(1)-(4);
21(e)(1)-(3); and 36E)**

A. Notification and Communications Generally

39. Two-way communications among school officials and personnel during a Zimmer emergency are presently limited to the use of commercial telephones (Tr. 5378, 5901-02).

40. The use of telephones by 10% of the telephone subscribers within exchange is sufficient to overload that system, e.g., an exchange possessing

3000 subscribers will be overloaded if 300 subscribers use a telephone at one time (Tr. 6542-3). When an exchange is overloaded, no calls can be completed (Tr. 6522).

41. During emergencies, the New Richmond area (Clermont County) telephone exchanges (prefixes 553 and 557) are frequently overloaded (Kennedy Testimony fol. Tr. 5752 at 3; Tr. 5784-85). Similarly, the 635 telephone exchange which serves the Campbell County plume exposure EPZ historically has been subject to overloading (Tr. 7965).

42. A second problem affecting school communications is posed by parents calling the schools in sufficient volume to tie-up the school telephones (Direct Test. Sell, Voelker, Reinhardt fol. Tr. 6371 at 6-7; Tr. 5639-40).

43. Applicants' witness Badger has a system for dealing with the second problem which will provide for one or more lines remaining free for outgoing calls where two or more lines are present. This system is known as Mr. Badger's Secret System (Tr. 6526-27, 6536-40).

44. Mr. Badger's Secret System cannot alleviate the problem caused by an overloaded telephone exchange. This problem removes the telephone system from use; thus communication must be by some other means. In addition to Mr. Badger's Secret System, Applicants indicate three ways to overcome both problems (Applicants' Test. at 9, 11-12; Tr. 5882-85):

- i. Provide notification and instructions to the affected schools by telephone prior to notifying the public whenever possible. However, the County plans provide for notification of 100% of the population within five miles of the plant within 15 minutes of the declaration of a site or more severe emergency (Board Ex. 2, §II-D, p. II-D-2; Board Ex. 4, 5 & 6, Annex C, pp. C-3&4')
- ii. Provide NOAA radios to the schools. However, NOAA and similar radios provide for communications to the schools only; they do not provide the schools the capability to transmit messages (Tr. 5651-52, 6399-400).
- iii. Provide volunteer amateur radio operators with radios to establish communications. The Clermont Plan provides, *in toto*, "[t]he Milford Amateur Radio Club (MARC) and Bethel Amateur Radio Klub (BARK) will assist CCDSA with emergency communications as necessary" (Board Ex. 2, §II-E, p. II-E-2). The Campbell, Bracken and Pendleton County Plans contain comparable provisions (Board Ex. 4, 5 & 6, Annex B,

* The Kentucky Plans do not specify what type of emergency; however, NUREG-0654 provides for two emergency classifications: site and general, so that it is reasonable to presume that notification of a site emergency will be given. Further, public notification at the onset of a site emergency could not be totally restricted to Ohio.

p. B-1-2). The record does not reflect whether these resources could in fact provide effective and timely communications to the school systems if telephone communication is unavailable.

B. Notification and Communications Specifically

Clermont County

45. In Clermont County, District School Superintendents have authority to institute protective action for their schools (App. Test. at 8). The Clermont County Emergency Plan provides for primary communications among public school emergency resource response agencies by commercial telephone with NOAA weather radio and the emergency broadcast system as backups. The latter do not provide for two-way communication (Tr. 5879-80, 5882; Board Ex. 2, §II-E, Table E-1, pp. II-E-3 and 5; §III-A, p. III-A-2; §III-C, pp. III-C-1 through 3). No school within the plume EPZ in Ohio has more than four telephone lines and some have only one or two lines (Tr. 5038).

46. The Felicity-Franklin School District must utilize long distance trunk lines for communications with the county EOC, the Applicants' EOF and the county school superintendent (Tr. 5038-39, 7024-5).

47. At the New Richmond School Site, the Superintendent of the New Richmond School District has four, the High School and Middle School have three each, and the Elementary School has two telephone trunk lines. These lines have been subject to overload in the past, particularly during inclement weather, by parental calls, although it is usually possible to obtain an open line in the superintendent's office (Tr. 5638-40, 5640, 5692-93). Planners have made no inquiry regarding past overloading of school telephones during emergencies (Tr. 5039-40, 5042). Applicants may provide a two-way radio communications link between the Superintendent of the New Richmond School District and the Station (Tr. 5883, 5905).

Campbell County

48. The Campbell County Emergency Plan provides for communications among its public school emergency resource agencies by non-dedicated telephone lines (Plan, Basic Plan, pp. V-5, 6; Annex B, p. B-3; Annex C, p. C-4). Notification to the schools in the event of a Zimmer emergency can also be provided by monitor radio activated from the EOC, NOAA radio, and, in some cases, the siren system (App. Test. at 11).

49. The County School superintendent relies on four non-dedicated telephone trunk lines (Sell, Voelker, Reinhardt Test. fol. Tr. 6371 at 6-7).

50. County Superintendent's notification to four elementary and one middle school, including A. J. Jolly Elementary School 3.5 miles from the Zimmer Station, is hindered by the fact that these schools have single non-dedicated telephone lines which are subject to overload (*Id.*).

51. The County Superintendent's four non-dedicated trunk lines are the means of telephone communications with 54 regular bus drivers (*Id.* at 4, 7).

52. The telephone trunk lines for each of the affected schools, the Superintendent and the bus garage are often overloaded during inclement weather because of parental telephoning (*Id.* at 7).

53. The Commonwealth of Kentucky has indicated that two-way radios will be provided to the Campbell County Superintendent of Schools, A. J. Jolly Elementary School, and St. Peter and Paul Elementary School (Tr. 6069-70, 6522). The Superintendent is unaware of any such arrangements (Tr. 6373-74). Applicants may provide a two-way radio communications link.

School Bus Drivers, Clermont and Campbell Counties

54. The Plans make no provision for communication with school bus drivers and other school personnel in the event telephones cannot be used (Finding 44, *supra*, Tr. 6071-72).

55. The schools involved in the New Richmond and Bethel-Tate School Districts of Clermont County and the Campbell County School District have no reliable means of communication with bus drivers while the driver is enroute (Tr. 5058, 5632-34, 5659-61, Sell, Voelker, Reinhardt Test. fol. Tr. 6371 at 5; Tr. 6375). The best available means of communication is to telephone a resident located on the route and have a message delivered to the driver (Tr. 6158-59, 6400-01).

56. During the school day when not transporting students, the buses of the New Richmond and Bethel-Tate School Districts of Clermont County and the Campbell County School District are parked at the driver's residence or other parking area (Sell, Voelker & Reinhardt Test. fol. Tr. 6371 at 4-5; Tr. 5646-48, 5058). The only means for school districts to summon the drivers to mobilize buses at the school sites is by telephone and broadcast media (Tr. 5667, 89, 93-94, 5903-04, 6525). School bus drivers are emergency response personnel (Tr. 7035, 57). School bus drivers during non-driving school hours are involved in other modes of employment, including farming, or in leisure pursuits, during which time they may not be accessible (Tr. 5661-63, 5058, 5652-53). The Campbell County School Superintendent's understanding of the requirements of Kentucky law is that children may only be transported in the school district's buses (Tr. 6375-77). There is no provision in any plan that addresses this problem (Tr. 5909-11).

C. School Location, Population, and Bus Resources

Clermont County

57. The New Richmond Exempted School District operates schools at two different sites within the plume EPZ (New Richmond-1503 students and Monroe-549 students); one site is outside the EPZ (Tr. 5048, 5636, 5645-46). The New Richmond and Monroe sites are located 6.8 and 5 miles from Zimmer, respectively (Applicants' Test. at 78). Both sites are north of the Zimmer Station (Board Ex. 2, §II-I, p. II-I-21).

58. The New Richmond Exempted School District has 20 school buses each with a maximum capacity of 71 (Tr. 5641, 5645, 5688). Roughly 99 percent of the district's children are transported to school via bus (Tr. 5690). Each bus travels three routes in the morning and evening (Tr. 5643-44).

59. The New Richmond School District does not possess a sufficient number of buses to simultaneously evacuate all students at the New Richmond and Monroe sites (Tr. 5050, 5645, 5688). All its buses would be able to evacuate less than three-quarters of the district's students in the EPZ at one time (cf. Tr. 5047). Arrangements have been made for the West Clermont School District (approximately 10-15 miles distant) to provide some additional buses, if needed, to aid in student evacuation, although the number of buses and specific arrangements with West Clermont are unclear (App. Test. at 89, Tr. 5690). Applicants testified that 17 buses are available from West Clermont (App. Test. at 85); the New Richmond school officials had no direct knowledge of the number available (Tr. 5690). Applicants concede that these buses could not be of assistance during normal busing periods (Applicants' Test. at 95-96).

60. The record fails to indicate whether appropriate consideration has been given to whether buses sent from other districts can timely evacuate the children at the New Richmond district because of the time required for those buses to reach the plume EPZ school sites (Tr. 5047, 5050, 5064-66, 6803-06). While there is testimony that at least some consideration has been given to this problem, there is no plan provision or letter of agreement dealing with it.

Campbell County

61. The Campbell County School District has nine schools at various sites within the EPZ. These schools, the enrollment, and distances from the Zimmer Station are as follows:

School	Enrollment	Miles from Zimmer
A. J. Jolly Elementary	221	3.5
Alexandria Elementary	617	10.5
Grants Lick Elementary	271	9.0
Southern Campbell Middle School	582	9.0
Campbell County High School	1580	10.5
Campbell County Vocational School	362	10.5
St. Peter & Paul Elementary School	62	4.5
St. Mary Elementary School	410	10.5
Bishop Brossart High School	<u>242</u>	10.5
Total Enrollment	4347	

(Direct Testimony of Sell, Voelker and Reinhardt fol. Tr. 6371 at 3; App. Testimony at 78-79.) Although Standard Operating Procedures are contemplated to cover emergency response in the Campbell County Schools, at the time of the hearing they had not been developed (Tr. 6043-44, 6135). It is contemplated that the closest schools would be evacuated first (Tr. 6388-90, 6394, 6105-6).

62. This District has 60 buses to accomplish evacuation, 25 of which are 8 years or older. These buses experienced 78 out-of-service days during the 1980-81 scholastic year. (Direct Testimony of Sell, Voelker & Reinhardt fol. Tr. 6371 at 3-4).

63. Five to six buses to evacuate the St. Peter and Paul and A. J. Jolly students would be dispatched from the bus garage, a distance of 11-12 miles (Tr. 6394, 6409). Four qualified bus drivers would be available at the bus garage (Tr. 6429). Teachers cannot be assigned responsibility to drive school buses because they must be accountable for the students in their charge (Tr. 6396-97, 6405, 6412-13). Under optimum conditions, it will take one hour from initial notification to evacuate until the boarding of the Jolly students on the buses (Tr. 6076, 6411-12, 6418, 6422-25).

D. Other Considerations

64. School officials in the Ohio districts of the plume exposure area of the EPZ have not kept parents advised of their planning for a Zimmer emergency. There is testimony that this has resulted in a lack of parental confidence that school children will be adequately protected. Communications to parents are planned in the future (M. Erbe Test. at 3-4; Tr. 5544-45).

65. Parents of New Richmond School District students, although advised not to go to the school, may proceed to the school in the event of a Zimmer emergency to transport their children (Kennedy Test. fol. Tr. 5752 at 4). This may block traffic and create congestion. There are insufficient police officers to direct or control such traffic (Kennedy Test. fol. Tr. 5752 at 4). The New Richmond site (Bethel-New Richmond Road) is particularly susceptible to traffic congestion (Kennedy Test. fol. Tr. 5752 at 4). The record does not reflect whether the fact that Route 52 in New Richmond is the only identified evacuation route "bottleneck" (Staff Ex. A, Attachment to Feb. 12, 1982, letter from Borgmann to Denton, pp. 13-14) would compound this situation at the school site or on Route 52 in New Richmond.

66. There is testimony that parents in Kentucky may also respond to the schools in the event of an emergency, although there is no evidence that this would create traffic problems to the extent possible at the New Richmond School site (Sell, Reinhardt, Voelker Test. fol. Tr. 6371 at 8-9; Tr. 6411-12, 6418, 6422-25).

Volunteer Fire and Life Squad Personnel (Contentions 20(e)(3)-(4), (7)-(8), 36(H))

A. Clermont County

67. Clermont County has only volunteer fire squads within the plume exposure EPZ. Two units outside the plume EPZ are staffed by full-time personnel (Tr. 5119-20, 5123-26). The Plan provides that the fire squads' primary responsibility is to fight fires. Secondly, fire personnel, as available, are assigned to provide door-to-door verification of population notification and to support access control. (Board Ex. 2 § III-B, p. III-B-2, 3.) They may be required to use personal vehicles to accomplish verification (App. Test. at 51). The record indicates that the units staffed by full-time personnel will respond to relocation centers (Tr. 5119-20; Board Ex. 2, § III-B, Table III-B-1, p. III-B-5).

68. In Clermont County, all but three life squads are composed of volunteers (Tr. 5125); all five responding in the plume EPZ are composed of volunteers (Board Ex. 2, § III-B, Table III-B-4, p. III-B-9). Each of the five has one emergency vehicle equipped with a radio (App. Testimony at 57). Standard emergency medical support is the function assigned the Life Squads (Board Ex. 2 § III-B, p. III-B-4).

69. The record reveals the following with respect to the Monroe Life Squad and New Richmond Fire and Life Squad in Clermont County.

70. During normal working hours, from approximately 8:00 a.m. to 5:00 p.m., relatively few of the 42 volunteer New Richmond life squad and

fire personnel are available. There is testimony that approximately 95% of the New Richmond life squad personnel and 25% of the fire personnel have indicated that they will not respond to the Zimmer Station in the event of a nuclear emergency. It is unclear whether these individuals would respond within the EPZ in a nuclear emergency. The leader of the New Richmond life squad would first attend to the needs of his family and then determine whether he would undertake his emergency response role. (Feldkamp Test. fol. Tr. 5467 p. 1-3; Tr. 5475-6, 5489-91.) There is evidence that many volunteers would similarly attend to the needs of their families prior to responding and that representations may have been made to them that they would have time to do so. (Tr. 5461, 5769-73, McMillian Testimony fol. Tr. 5567 at 4).

71. The Chief of the Monroe Township Life Squad has elected not to participate in any Zimmer Emergency and this has resulted in halting radiological training for this life squad (Tr. 5458-9, 5462).

72. To qualify as an emergency medical technician one must successfully complete a 70-hour course in which less than 30 minutes is devoted to radiological training (Tr. 5445, 5456-57). Some additional training apparently has been offered, but the extent of that training and the extent of the participation in it is unclear. Twelve (three life squad and nine fire personnel) of the 42 New Richmond Fire and Life Squad personnel received it (Tr. 5130-31, 5464-66, 5471-72). Applicants indicate that two of the three life squads designated to respond to the Zimmer site have been trained in the transportation of contaminated individuals. A third is to be trained prior to operation. (App. Test. at 115.)

B. Campbell County

73. In Campbell County, fire and rescue units are combined (Board Ex. 5, Annex H, § II-C, p. H-2). Within the Campbell EPZ the personnel are all volunteer (Tr. 6107-09). The fire personnel in Campbell County are assigned the task of fire response and assisting other emergency response functions. Responsibilities of fire units in Campbell County, in order of priority, are:

- 1) Rescuing survivors of fires and other emergencies;
- 2) Extinguishing fires;
- 3) Assist in protective actions such as confirmation of evacuation, access control, or in-place protection/ sheltering as needed; and
- 4) Assist in other emergency response functions if capable.

These priorities may be changed upon recommendations from the County DES Director (Board Ex. 5, Annex I, § IV-A, p. I-2; Tr. 6108). SOPs for the fire departments are being developed (Tr. 6135).

74. The Eastern Campbell County Volunteer Fire Department is located on Smith Road outside Mentor and serves Mentor as well as an area in the plume exposure EPZ (Board Ex. 5, Annex I, pp. I-1-I-2 Appendix I-1; McCormick and Smith Test. fol. Tr. 6440 at 1; Tr. 6455). It has three to five personnel available during working hours. There is testimony that its members will assist their families before responding (McCormack & Smith Test. fol. Tr. 6440 1-4; Tr. 6479-82.) This fire department has not been briefed with regard to its specific responsibilities, about which there appears to be some confusion, and does not have an SOP (McCormack & Smith Test. fol. Tr. 6440 1-4; Tr. 6446-48, 6483-88, 6773-75; cf. Board Ex. 5, Annex F, § C, p. F-9-3; Tr. 6443-44). It has had some radiological monitoring training, and has radiological monitoring equipment (Tr. 6443-44, 6469-70). Personal dosimetry will be provided its members; special protective gear is not required (Board Ex. 5, Annex E, p. E-3; App. Test. at 66). It has adequate radio communications with other state and local response agencies (Tr. 6457-58).

75. The Campbell County Plan specifies that rescue squads are to transport contaminated individuals to a hospital as well as to perform their normal duties. The Plan provides for assistance from the Commonwealth on request (Board Ex. 5, Annex H, § IV C, p. H-2). The record indicates that at present emergency medical technicians are only prepared to provide first aid and hospital transportation and are not trained in the proper transportation procedures for contaminated individuals, or to decontaminate themselves or their vehicles (McCormack and Smith Test. fol. Tr. 6440, p. 2-3; Board Ex. 5, Annex H, Medical & Public Health, p. H-2). The EMT training includes instruction on dealing with radiation burns resulting from nuclear weapons, but specifically disclaims any relationship to injuries resulting from fixed nuclear facilities (McCormack and Smith Test. fol. Tr. 6440, p. 2). It appears that, other than some monitoring training, no training has been given with respect to injuries resulting from nuclear power plant accidents.

C. Availability of Volunteers

76. Kentucky state and local planners have no knowledge of where volunteer response personnel are employed and no inquiry has been made of fire chiefs to determine if firemen could respond during daylight hours in the event of a Zimmer emergency (Tr. 6129-30).

77. The plan and the record fail to indicate that consideration has been given to the number of Clermont County volunteer fire and lifesquad personnel that could be available at the time of an emergency and whether that number could adequately perform the responsibilities given them by the Plan.

78. While many witnesses expressed doubts about whether volunteers would respond to a Zimmer emergency, some also testified that volunteers had always responded to calls to duty in the past (Tr. 5451-53, 5477-79, 5767-68, 5473-76). This is consistent with the testimony of Applicants, FEMA, Kentucky and Ohio that, as a general proposition, volunteers readily respond during emergencies (App. Test. at 114-15; FEMA Test. fol. Tr. 6982 at 43; Tr. 5197-5200, 6111), as well as the testimony of some of the volunteers themselves (Tr. 6483-91).

Ability of Clermont Population to Follow Instructions (Contention 23(1) & (2))

79. It is possible that a large number of Monroe Township residents will not utilize cards or towels indicating notification and will not follow evacuation or take shelter directions disseminated to them. The Chief of the Monroe Township Police estimates the period involved for door-to-door verification of Monroe residences would require three and one-half to four hours because of the number and nature of the roadways and the fact that many residences are serviced by 200-foot and longer driveways. (McMillian Test. fol. Tr. 5567 at 1-4).

80. The residents of New Richmond, during tornado and flood emergencies, have failed to implement protective actions upon notification despite previous distribution of information concerning protective actions. These residents often request information from the police department and, although they generally follow police instruction, they often exercise poor judgment (Kennedy Test. fol. Tr. 5752 at 2-4; Tr. 5763-4, 5494).

81. Approximately 50 to 90 percent of these residents may not display a notification symbol, and may overreact and panic. (Feldkamp Test. fol. Tr. 5467 at 3-4; Kennedy Test. fol. Tr. 5752 at 3-4; Tr. 5430, 5494, 5497, 5579-80, 5783).

82. A portion of the population (those served by the Clermont Metropolitan Housing Authority) involved in the plume exposure area of the EPZ do not follow direction or respond to written or verbal communications absent the opportunity to make inquiry concerning the instruction to be followed. This portion of the population has a severe inability to follow simple directions (Slemmer Test. fol. Tr. 5426 at 3-5).

83. FEMA testified that, based on its broad exposure to disasters, people in emergencies generally follow directions (FEMA Test. fol. Tr. 6982 at 69). This should be contrasted with the contrary testimony of Sheriff Wessler of Brown County who has had extensive law enforcement experience (Tr. 5290).

**Transportation Dependent Disabled Individuals Clermont County
(Contention 24(10))**

84. In Clermont County, lists of disabled, handicapped and senior citizens requiring special transportation are to be compiled from postage paid postcards designed to identify these individuals. The cards are to be distributed with the publication "Circle of Safety." (App. Testimony at 45-46; "Circle of Safety" at 13, 15.) According to Applicants, Clermont Association for the Physically Handicapped/Developmentally Disabled (CAPH/DD), Clermont Senior Services, and the County Disaster Services Administration all have responsibility for maintaining lists; hence it is unclear to whom the cards are to be returned (App. Testimony at 46). The Plan itself does not mention DSA, but does identify the County Welfare Department, CAPH/DD, and County Senior Services (Plan, § II-B, p. II-B-1; § II-1, p. II-1-5; § III-A, p. III-A-16). If a card has not been previously returned, absence of an "I have been notified" signal should summon help.

85. In Clermont County, CAPH/DD apparently has primary responsibility for evacuating these individuals (Board Ex. 2, § II-B, p. II-B-1; Tr. 5501-12). CAPH/DD has identified 153 mentally and approximately the same number of physically disabled individuals within the plume exposure EPZ. Of these, 20 to 30 are confined to wheelchairs, four or five of whom could not be transported in a supine position. (Tr. 5509-11.) The expected total number in the plume exposure EPZ requiring assistance, based on population figures and state statistics, is approximately 976. Temporarily disabled individuals may not identify themselves prior to a Zimmer accident. (Goode Testimony fol. Tr. 5499 at 3-4.)

86. The actual number requiring outside assistance, *i.e.*, those who could not rely on family or friends, will vary with the time of day. A method of identifying those who will not require outside assistance has not yet been developed. (Tr. 5523-24.)

87. CAPH/DD will coordinate transportation (Board Ex. 2 § II-B, p. II-B-1) with assistance from Clermont Authority for Rural Transportation (CART) (*Id.* § III-I, p. III-I-5), which has a superior capability to furnish transportation (Finding 88). The Life Squads and National Guard may assist (*Id.* Tr. 5172-73).

88. CAPH/DD has two buses. One is a converted maxi van with two wheelchair tiedowns and six seats. The other, the size of a 52 passenger school bus, has eight wheelchair tiedowns and 11 seats. This vehicle may not be able to negotiate some of the country lanes in the plume exposure EPZ. CAPH/DD has one driver who has no telephone and must be contacted through a relative eight miles distant. (Goode Testimony fol. Tr.

5499 at 2-3.) CART has seven radio equipped vans and one radio equipped bus equipped with wheelchair lifts (Board Ex. 2, § III-A, p. III-A-1). CART has a total of 22 radio-equipped "buses" (App. Test. at 5).

Monitoring of Farm Products in Clermont County (Contentions 25(3) & (4))

89. The Clermont County Board of Health and the Clermont County Cooperative Extension Service provide support to the state which is responsible for the monitoring and evaluation of the impact of radiation release upon county farm products and livestock. Based upon such monitoring and assessment the state will institute protective actions pertaining to milk and livestock feed control. (Board Ex. 1, § IV, pp. IV-4 - IV-8, § V, p. V-3 - V-5; Board Ex. 2, § II-I-4-e, p. II-I-6; Tr. 5561-62).

90. Monitoring will be performed on products intended for human consumption at various stages of production (App. Test. at 118-20).

91. According to the Plan, contaminated foodstuffs are to be kept from consumers (Board Exh. 1 at IV-8 and V-5; Tr. 5566, 6851).

92. The state maintains a list of all Grade A milk producers in Clermont County and a list identifying shipping locations for each producer (App. Test. at 120). The state has helicopters and laboratory facilities available to assure the timely transportation and analysis of milk samples (Tr. 5562-63, 6836-38). The state may quarantine milk and forbid the sale of milk (Board Exh. 1 at IV-2; Tr. 5560).

93. There are several goats present in Clermont County which produce milk for human consumption. The farms in which goats are maintained have inadequate storage capacity to keep feed covered and it would be difficult to maintain roughage under cover. It is unknown whether goats' milk is transported within or without the county for retail sales and subsequent consumption. There are only two goats' milk producers in the county which are tested. The remaining goats' milk is consumed or sold at the farm of its source (Sutton Test. fol. Tr. 5556 at 2, 4).

94. There is no specific provision in the state and local Ohio plans for the monitoring of goats' milk and that question is apparently being considered by the State of Ohio (Tr. 5140-2).

Inadequacies in Radio Communication in Clermont County (Contention 20(b)(4))

95. An area presently exists along U.S. Highway 52 in the vicinity of the Zimmer facility where there are "dead spots" in radio communications (Kennedy Test. fol. Tr. 5753). To eliminate these problems, Applicants will

provide a repeater station (Applicants' Test. at 5; Tr. 5875), and three 100W radio base stations with antennas at its communications facilities located on a hilltop near Zimmer Station to serve Clermont County police, fire, and local government services, and will provide space for a life squad radio system (Applicants' Test. at 5; Tr. 5874-75).

96. The Applicants are continuing to work with New Richmond and Moscow officials to provide additional communications equipment which would improve communications in the vicinity of Neville and points further along the river (Applicants' Test. at 6; Tr. 5875-76).

"Circle of Safety" (Contentions 4(12) & 23(3))

97. The "Circle of Safety" is intended to be the primary means for dissemination of general radiological emergency information to members of the public who reside within the plume EPZ (App. Test. at 101).

98. Subsequent to the filing of Intervenors' testimony relating to these Contentions the applicants rewrote the "Circle of Safety" essentially by simplifying the language and reducing the readability level to a seventh grade level on the Fry Readability Graph (Tr. 5818). Further reductions might affect the message content (App. Test. at 105). Insufficient information on the services available at relocation centers is given in the rewritten version (Tr. 5718-20, 5735).

Evacuation Time Study (Contentions 20(c)(1)(3), (5)-(9), (10)-(14), 36(B), 36(C), 36(D))

99. The roadways situated in the involved counties within the plume exposure EPZ are steep, hilly, narrow and winding, subject to snow and ice accumulation, and to impassability resulting from flooding. These factors retard evacuation of the population involved in those areas. (Tr. 5303-15, 5323-51; E. Erbe Test. fol. Tr. 5303 at 3-6; 5364-5421; McMillian Test. fol. Tr. 5567 at 2; 5629, 5643-4, 5654-5, 5683-4; Sell, Voelker, Reinhardt Test. fol. Tr. 6371 at 5-6; Brown, Nelson, Beiting Test. fol. Tr. 6492 at 1-2; Tr. 6495-6515; Reder Test. fol. Tr. 6515 at 3-5.)

100. The Ohio state and county planners have no knowledge of and apparently have not given consideration to roadways in Clermont County which do not have berm or shoulders, to the residents served by 200 ft. lanes, to the time required to clear roads of snow or ice accumulation, and to the manner and means by which the county engineer will maintain roads in the event of snow (Tr. 5010, 5013-4, 5026, 5035, 5099, 5117-8).

101. The Kentucky state and local planners acknowledge that Campbell County is hilly, has crooked and narrow roads that are, to a certain extent, steep and curving. Normal speeds on these roads are about 35 m.p.h. They also acknowledge that there is insufficient equipment for snow removal, that ice accumulation and severe weather conditions will render most routes impassable, that Ky 8 is impassable at 58 ft. flood stage of the Ohio River, and the Gubser Mill area is subject to flash floods rendering the roads there impassable. (Tr. 6045-6, 6053-4, 6056, 6058, 6064-5).

102. Only in the sector of the ten-mile radius EPZ in which New Richmond is located do evacuation route capacities present a potential limit on the time in which a sector can be evacuated. In the other sectors, the number of residents' vehicles is below reasonable evacuation route capacities of 1000 vehicles per hour. The evacuation time estimates for these other sectors are unaffected by a reduction of roadway capacities by 25% to 750 vehicles per hour. (App. Test. at 36; Staff Ex. A, Attachment to February 12, 1982, letter from Borgmann to Denton, pp. 12, 15; Tr. 6596-97, 6698, 6737-38, 6752-53.)

Standard Operating Procedures (Contention 34)

103. The Commonwealth of Kentucky and Campbell County plans provide that "During an emergency, Standard Operating Procedures (SOPs), developed from the plan, will be employed to respond to the emergency rather than this document" (Board Ex. 3, Plan Organization, at vi; Board Ex. 5, Basic Plan, Appendix 8, at VII-8-1). Commonwealth witnesses testified that this quoted language will be rewritten to state:

In an emergency standard operating procedures, or SOPs, developed from the plan will be employed to provide additional guidance or specialized functions which are markedly different from those which are normally conducted.

Tr. 6134.

104. SOPs will not be written for every emergency function which would have to be carried out, but only for specialized functions (Tr. 6136). A person performing a specialized function would rely on an SOP for guidance, while other emergency workers would rely on the terms of the plan itself (*Id.*). The SOPs will furnish more detailed instructions than will the plans (*Id.*).

105. The Campbell County plan contains a list of SOPs required to implement the plan (Board Ex. 5, Basic Plan, Appendix 8, at VII-8-1). A comparable list appears in the Kentucky plan (Board Ex. 3, Basic Plan, Appendix 5, at 5-1). Additional SOPs may be required with respect to the

evacuation of people without transportation (Tr. 6102) and the distribution of potassium iodide (Tr. 6180). There are no completed SOPs (Tr. 6140). While there was testimony to the effect that the Kentucky plan, as it now stands, would be adequate to protect the public (Tr. 6141), it was stipulated that the plan cannot be implemented without SOPs (Tr. 7953-54).

Plan for Indiana Ingestion Exposure EPZ (Contention 35)

106. The 50-mile ingestion pathway for the Zimmer Station EPZ includes a portion of southeast Indiana. After the record was closed, by letter of April 19, 1982, Applicants submitted a radiological emergency plan for the State of Indiana to the Staff pursuant to 10 CFR § 50.33(g). The testimony at the hearing had indicated the existence of such a plan. (App. Testimony at 124; Tr. 4976-77, 5150-59, 6174-75).

Public Notification System (Contention 36(I))

107. Within 5 miles of the station, the recommended alerting system includes 8 sirens covering approximately 40 percent of the population (App. Test. at 125). In addition to the sirens, in-home NOAA weather radios will be made available to all households within five miles of the station (*Ibid.*). In the 5-10 mile range, the population will be covered by either sirens or in-home NOAA weather radios (App. Test. at 125; Board Ex. 1 at II-D-3; Board Ex. 2 at II-D-2 Board Ex. 3 and 4 at C-4; Board Ex. 5 and 6 at C-3, 4).

108. The Prompt Notification System was designed with consideration of a wide range of weather conditions (App. Test. at 125). The Prompt Notification System as designed meets the design objective of direct coverage of essentially 100 percent of the population within five miles of the site.

109. An integrated test of the Prompt Notification System prior to its approval will determine the acceptability of the system as installed. If necessary, corrective actions to assure meeting regulatory requirements will be taken based on the results of the integrated test (App. Test. at 125-26; Tr. 6163, 6855).

110. Special arrangements will be made to assure that those with hearing or sight impairments will be notified by the Prompt Notification System (App. Test. at 126).

111. Although not an NRC or FEMA requirement, both the in-home NOAA weather radios and the sirens are battery equipped; hence, they are capable of functioning during electrical power outages (App. Test. at 126).

**Monitoring of Water Supplies
(Contention 36(K))**

112. The Campbell County and Commonwealth of Kentucky Radiological Emergency Plans for the Wm. H. Zimmer Nuclear Power Station both recognize that in the event of a radiological emergency at the Zimmer plant, domestic water supplies could be contaminated either by the accidental discharge of contaminated water from the station or by deposition from an atmospheric release (Bd. Ex. 3, Annex F, p. F-7; Bd. Ex. 5, Annex F, p. F-8; Tr. 6170.) These plans contemplate the possibility of the contamination of domestic cisterns, as well as surface and ground-water supplies (*Id.*).

113. The Commonwealth has the responsibility of providing safe drinking water to the citizens of Kentucky (Tr. 6170). The Campbell County Plan provides that the Kentucky Department for Natural Resources and Environmental Protection is responsible for developing and regulating the public water supplies in the Commonwealth. The Bureau for Health Services is responsible for regulating private water supplies. The Radiation Control Branch will perform tests for radiological contamination in the plume exposure and ingestion exposure pathway EPZs. The Radiation Control Branch will coordinate with the Division of Water, the Division of Natural Resources, Environmental Protection for collection and delivery of water samples for analysis. (Bd. Ex. 5, Annex F, Appendix F-12-1; Tr. 6173.) The Northern Kentucky District Health Department will assist in collecting environmental samples, including water samples, and the County Disaster and Emergency Services Director will arrange for the samples to be transported to the proper laboratories for analysis. (Bd. Ex. 5, Annex H, p. H-2).

114. The Kentucky Plan contains a list of public water supplies within a 50-mile radius of the Zimmer power plant. (Bd. Ex. 3, Annex F, Table F-4.) The Campbell County plan states that lists of public water supply sources within the EPZ-1 ingestion pathway are maintained in the State EOC for prompt emergency use. (Bd. Ex. 5, Annex F, Appendix F-12, p. F-12-1.) The record is silent as to any listing of private water supplies which may exist.

115. In the event of contamination of the Ohio River during a Zimmer emergency, this will be detected by a monitoring station located at the Zimmer Station itself. (App. Test. at 128; Tr. 6170). This fact will be communicated directly to the Kentucky EOC by the Zimmer Station, who will contact state monitoring teams in Frankfort, Kentucky. (Tr. 6171). These teams will be responsible for telephoning nearby waterworks to inform them that water intake valves should be closed (*Id.*). Additionally, two-way radio communications will be established between the Zimmer

Station and the three nearest water intake and treatment facilities located downstream from the Zimmer Station on the Ohio River: the City of Cincinnati, Kenton County and Newport Water Works (App. Ex. 13 at 5.4.9 and Appendix D, Letter of February 9, 1981; App. Test. at 127, Tr. 6170-71.) This will provide for a redundant notification procedure for those waterworks involved. (Tr. 6171.)

116. The Frankfort-based monitoring teams will be mobilized and in the field within 3-½ to 4 hours of notification (Tr. 7846). After the samples are taken, they are transported to Falmouth, Kentucky for testing (Tr. 7849). Travel time between Falmouth and Mentor is one hour (Tr. 7849). Falmouth is an hour and one-half away from Newport Water Works (Tr. 7850), which was stated to serve Mentor (App. Test. at 128). Therefore, it was estimated that it could take between five and a half to seven hours to get a particular water sample analyzed (Tr. 7850).

117. Based on the average speed of the Ohio River, there would be a period of about ten hours from the time of any liquid release from Zimmer Station to the time it reached the nearest waterworks intake on the Ohio River (App. Testimony at 127-128).

118. If a potential for contamination of water supplies, including wells and cisterns, existed, the public would be instructed not to utilize these supplies until tests had demonstrated them to be safe (Tr. 6173-74). If water sources are found to be unsafe, the state can isolate them from the public water supply or store the water until short lived radionuclides have decayed to safe levels. (Bd. Ex. 5, Annex F, Appendix F-12, p. F-12-1.) Wells will be pumped, if necessary (Tr. 6174).

119. Kentucky Disaster and Emergency Services will provide water in the interim (Tr. 6173). Supplies of uncontaminated water will probably not be immediately necessary if water intakes on the Ohio River are closed because water works have some reserve storage capacity and can continue to supply water, usually for one to two days (App. Test. at 128; Tr. 6170-72). Nonetheless, Kentucky organizations have gained extensive experience in supplying water from alternate sources in other instances, such as floods, where water supplies have been rendered unusable (App. Test. at 128, Tr. 6169-70).

LICENSE CONDITIONS

Prior to authorizing operation of the Station at power levels in excess of 5% of rated power, Applicants shall demonstrate to the satisfaction of NRC Staff that:

1. A survey of volunteer personnel assigned on emergency response role inside the plume exposure EPZ has been made to determine:

- a) the availability of such personnel by time of day;
- b) the existence of family commitments of such personnel which could interfere with their ability or willingness to respond in a radiological emergency; and
- c) the willingness of such personnel to respond in a radiological emergency to i) the Zimmer Station and ii) within the EPZ.

In making this survey, account shall be taken of the portions of any community which may not follow instructions to signify notification in determining how many volunteer personnel may be necessary to accomplish door-to-door verification of notification. Applicants shall demonstrate to the satisfaction of the Staff that sufficient volunteer personnel are available to discharge their assigned responsibilities or that steps are in progress to obtain sufficient personnel.

2. Clear authority for the maintenance of lists and conducting of surveys of transportation dependent disabled individuals in Clermont County has been established, such a survey has been conducted, the list compiled, and transportation needs assessed.

3. A repeater station and three 100 watt radio base stations have been installed to eliminate "dead spots" in radio transmissions along U.S. 52 for use by Clermont County police, fire, and local government services. Space shall be provided for a life squad radio system.

4. The publication "Circle of Safety" is issued as revised (Applicants' Testimony fol. p. 106) and as further revised to detail the services available at relocation centers.

5. All evacuation route maps available to the public reflect the additional evacuation routes adopted by the State of Ohio and Clermont County.

CONCLUSIONS OF LAW

In an operating license proceeding, the Board is called upon to decide only issues in controversy among the parties (10 CFR § 2.760a and Appendix A to 10 CFR Part 2, Section VIII). In this case, the contentions and evidence have placed in issue the general subjects of compliance with 10 CFR Part 50, Appendix I, cable tray manufacture, control rod design and manufacture, fire protection of cable trays, financial qualifications, and offsite emergency planning. Contentions related to radiological monitoring, training of the local populace to deal with transportation accidents of shipments of radioactive material, an alleged lack of a need for the facility, and an alleged lack of a sufficient fuel supply for the facility were disposed of summarily.

Based upon the foregoing findings of fact which are supported by reliable, probative, and substantial evidence as required by the Administrative Procedure Act and the Commission's Rules of Practice, and upon consideration of the entire evidentiary record in this proceeding, the Board makes the following Conclusions of Law:

- (1) The requirements of 10 CFR Part 51 have been met;
- (2) The requirements of Section 102(2)(A), (C) and (E) of the National Environmental Policy Act have been met;
- (3) Control rods as manufactured and installed are capable of adequately performing their intended function;
- (4) Cable trays as manufactured and installed are capable of adequately performing their intended function;
- (5) Cable trays for which additional fire protection is required have been wrapped in a material which was qualified to perform its intended function;
- (6) The state of offsite emergency preparedness does not provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency;
- (7) Offsite emergency response plans are not invalid by virtue of this incorporation by reference of Standard Operating Procedures.

IV. ORDER

WHEREFORE, in accordance with 10 CFR §§ 2.718, 2.760, 2.761a, and 2.762, IT IS ORDERED that

This Board retains jurisdiction of this matter to rule on the motion of MVPP to admit new contentions and conduct any further proceedings which may become necessary as a result of that motion and the Board's rulings set forth herein.

This decision will constitute the final action of the Commission thirty (30) days after its date unless exceptions are taken.

Exceptions to this Initial Decision may be filed within ten (10) days after service of this Initial Decision. 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 Staff] any other party may file a brief in support of, or in opposition to, the exceptions.

IT IS SO ORDERED.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

**Frank F. Hooper
ADMINISTRATIVE JUDGE**

**M. Stanley Livingston
ADMINISTRATIVE JUDGE**

**John H Frye, III. Chairman
ADMINISTRATIVE JUDGE**

**Bethesda, Maryland
June 21, 1982**

APPENDIX A

Exhibits

Applicants' Exhibits

No.	Identified	Received	Description
1	597	605	Application, including FSAR, ER and FPER (with amendments)
(Supp.)	4907	4907	
2	1123	1125	Letter to R.F. Heishman from Earl Borgmann re IE Inspection Report 50-358/78-21
3A-3L	1532		Welding Procedure and Performance Qualifications Test Sheets
4	2007		Page 9-1, Husky Products, Inc., Quality Control Manual
5	2559		List of Individuals Receiving Quality Assurance Training from RCI dated June 27, 1978
6	2559		List of Individuals Receiving Quality Assurance Training from RCI dated July 26, 1978
7A*	3411	3417	Rev. 13 to Fire Protection Evaluation Report
8A*	3411	3419	Rev. 14 to Fire Protection Evaluation Report

*Inasmuch as exhibit numbers 7 and 8 were used twice, the first exhibits so numbered have been designated 7A and 8A and have been referred to as such in this Initial Decision.

No.	Identified	Received	Description
7	3618	3652	Additional Financial Information and Page Changes to the Formal Application submitted November 14, 1981
8	3618	3652	Letter to Harold Denton from Earl Borgmann Responding to Three Staff Financial Questions
9	4483	4483	Chapter 20 - Staff Safety Evaluation Report - Financial Qualifications
10A-10C	4498	4609	Summary of Rate Increases for Applicants
11A-11D	4570		Decommissioning Costs for Zimmer Unit 1 - Four Tables Prepared at the Request of the Licensing Board
12	4572		Decommissioning Fund Balances for Various Earned Investment Rates
13	4908	4908	Emergency Plan for the Wm. H. Zimmer Nuclear Power Station
14	5302		Deposition of Charles Jackson
15*	5796	5816	Applicants' Testimony Relating to Emergency Planning Contentions
15A*	7891		Emergency Preparedness Completion Schedule for the Wm. H. Zimmer Nuclear Power Station

*Inasmuch as exhibit number 15 was used twice, the second exhibit so numbered has been designated 15A and has been referred to as such in this Initial Decision.

Staff's Exhibits

No.	Identified	Received	Description
1	745	745	Professional Qualifications of Richard S. Cleveland
2	754	754	Final Environmental Statement
3	754	754	Staff Supplement to Final Environmental Statement Regarding Radon
4	754	754	NUREG-0332, Health Effects Attributable to Coal and Nuclear Fuel Cycle Alternatives
5	754	754	Revised Tables, Summary and Conclusion to Draft NUREG-0332
6	754	754	Update of NUREG-0332
7	762	762	Letter to Earl Borgmann from Ronald Ballard enclosing revised draft Environmental Technical Specifications
8	4911	4913	Safety Evaluation Report - NUREG-0528
9	4912	4913	Safety Evaluation Report - NUREG-0528, Supp. No. 1
10	4912	4913	Safety Evaluation Report - NUREG-0528, Supp. No. 2
11		7146	Map - Evacuation Road Network
12		7146	Louisville, Kentucky District - Flooded Areas - Ohio River, Clermont County - Plate 5

No.	Identified	Received	Description
13		7146	Louisville, Kentucky District - Flooded Areas - Ohio River, Clermont County - Plate 6
14		7146	Louisville, Kentucky District - Flooded Areas - Ohio River, Clermont County - Plate 7
15		7146	Louisville, Kentucky District - Flooded Areas - Ohio River, Clermont County - Plate 8
16		7146	Louisville, Kentucky District - Flooded Areas - Ohio River, Clermont County

Dr. Fankhauser's Exhibits

1	854	862	Enrollment Figures for Moscow Elementary School
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Miami Valley Power Project's Exhibits

1	1057	1119	List of Certified Welders Employed by Husky Products
2	1842	1849	Welder Qualification Program
3	1947	1950	Memo to E. McClung from Randy Pratt re Welding Qualification for J. Allen and M. Brock
4	1956	1970	Field Complaint of Crater Cracks in TIG Welding
5	2043		Affidavit of Donald Blanch

ZAC/ZACK's Exhibits

No.	Identified	Received	Description
1	5208		Direct Testimony of Charles Jackson addressing ZAC/ZACK Contentions 20c(5) and 20(e)(6)
2	5234	5234	Memo from Health Planning and Resource Development Association of CORVA re Material on Activities of Radiation Safety Task Force
3	5309	5324	Photographs
4-15	5334	5351	Photographs
16-18	5367	5367	Photographs

County of Mentor's Exhibits

1	6434	6438	A. J. Jolly Elementary School Radiological Emergency Protective Action Procedures (Draft)
2	6435	6438	Zimmer Evacuation Plan Meeting - September 29, 1981

Board Exhibits

1	4935	4961	State of Ohio Nuclear Power Plant Emergency Response Plan
2	4935	4961	Clermont County Radiological Emergency Response Plan for the Wm. H. Zimmer Nuclear Power Station
3	6030	6034	Kentucky Radiological Emergency Plan

No.	Identified	Received	Description
4	6030	6036	Bracken County Radiological Emergency Plan
5	6030	6038	Campbell County Radiological Emergency Plan
6	6030	6040	Pendleton County Radiological Emergency Plan

APPENDIX B

Chronology of Zimmer Station Operating License Proceeding

October 27, 1972	Construction Permit issued.
September 28, 1975	Operating License Opportunity for Hearing noticed. (40 Fed. Reg. 43959).
January 23, 1976	Prehearing Conference.
March 19, 1976	Intervention Granted; Notice of Hearing issued. Initial intervenors were: Miami Valley Power Project, Dr. David B. Fankhauser, Mrs. Marie B. Leigh,* and the City of Cincinnati.
November 2, 1977	Board reconstituted: Frank F. Hooper, vice John R. Lyman, who was ill.
October 2, 1978	Board reconstituted: Charles Bechhoefer, Chairman, vice Samuel Jensch, Chairman, who retired.
May 21-23, 1979	Prehearing Conference.
June 19-22, 26-29, August 7-10, November 14-15, 1979.	Evidentiary hearings.
January 19, 1980	City of Mentor, Kentucky, admitted. LBP-80-6, 11 NRC 148.
April 22, 1980	ZAC-ZACK admitted. LBP-80-14, 11 NRC 570 LBP-80-19, 12 NRC 67.
April 23, 1980	Commonwealth of Kentucky admitted.
June 11, 1980	Clermont County, Ohio admitted.
March 2-4, 1981	Evidentiary hearings.

*Mrs. Leigh subsequently passed away.

March 5, 1981	Board reconstituted: M. Stanley Livingston vice Glenn Bright, because of schedule conflict.
April 24 - July 2, 1981	Proposed findings submitted.
September 10, 1981	Board reconstituted: John H Frye, Chairman vice Charles Bechhoefer, Chairman, because of schedule conflict.
October, 1981	Offsite Emergency Plans filed.
October 29-30, 1981	Prehearing Conference
November 12-13, 1981	Emergency Planning and Monitoring Contentions Revised and Specified.
November 20, 1981	Applicants & Staff Responses to Contentions.
November 25, 1981	Oral Board Ruling on Contentions.
November 30, 1981	Formal Discovery Cut-Off Date.
December 3, 1981	Prehearing Conference Order Ruling on Revised Contentions.
December 11, 1981	Board issues compilation of admitted Contentions. (Appendix C.)
January 25-29, and February 2-5, 1982	Evidentiary hearings.
February 4, 1982	Applicants' and Staff's Motions for Summary Disposition of Contention 2 granted.
March 1-4, 1982	Evidentiary hearings.
April 2-30, 1982	Proposed Findings submitted.
June 21, 1982	Initial Decision issued.

APPENDIX C

LIST OF EMERGENCY PLANNING AND MONITORING CONTENTIONS INDICATING DISPOSITION

Contention Number	Number in 11/13/81 Filing	Subject	Status
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Fankhauser's Contentions

2 - 4	N/A	Monitoring	
2(a)		Moscow School	Withdrawn.
2(b)		Involved Citizenry	Motion for Summary Disposition Pending.
2(c)		Isotopes Monitored	Motion for Summary Disposition Pending.
2(d)		Readouts at City Water Works	Withdrawn.
2(e)		Scope vague.	Motion for Summary Disposition Pending.

Contention Number	Number in 11/13/81 Filing	Subject	Status
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Fankhauser's Contentions (continued)

2(f)		Monthly Assays of Isotopes in Foodstuffs	Motion for Summary Disposition Pending.
2(g)		Ring of Stations	Motion for Summary Disposition Pending.
3	N/A	Monitoring	Withdrawn.
4		Emergency Planning -- Clermont County	
4(a)		-	Withdrawn.
4(1)	1	Expand EPZ	Admission denied.
4(2)	2	Fiscal Resources	Admission denied.
4(3)	3	Sheriff's Training & Equipment	Admission denied.
4(4)	4	CCDSA Training & Equipment	Admission denied.
4(5)	5	Agency Responsibility Matrix	Admission denied.
4(6)	6	Ingestion Exposure Pathway	Admission denied.
4(7)	7	Evacuation	Admission denied.
4(8)	8	Clermont County Hospital	Admission denied.
4(9)	9	Department of Energy	Admission denied.
4(10)	10	Emergency Classification System	Admission denied.
4(11)	11	Public Notification System	Admission denied.
4(12)	12	"Circle of Safety"	Admitted to the extent it directly attacks the document: "Circle of

Contention Number	Number in 11/13/81 Filing	Subject	Status
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Fankhauser's Contentions (continued)

			Safety"; Consolidated with 23 (3).
4(13)	13	Public Disobedience	Admission denied.
4(14)	14	Volunteers	Admission denied.
4(15)	15	School Evacuation	Admission denied.
4(16)	16	Evacuation Routes	Admission denied.

City of Cincinnati Contentions

7 - 10		Emergency Planning & Monitoring	Withdrawn Pursuant to Settlement.
18 - 19		Monitoring	Withdrawn Pursuant to Settlement.

ZAC-ZACK Contentions

20 - 32		Emergency Planning & Monitoring	
20X		Include Portions of Brown County in Plume Exposure Pathway EPZ	Admitted.
20(a)(1)-(3)		Lack of Brown County EOC	Denied without Prejudice to later submittal if 20 X Determined Favorably to ZAC-ZACK.
(b)(1)-(3)		Brown County Communications	Denied without Prejudice to later submittal if 20 X Determined Favorably to ZAC-ZACK.
(b)(4)		Certain Radio Communication Problems	Admitted.

Contention Number	Number in 11/13/81 Filing	Subject	Status
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ZAC-ZACK Contentions (continued)

(b)(5)-(8)		Communications with Schools	Admitted.
(c)(1)-(3)		Adequacy of Roads	Admitted.
(c)(4)		Adequacy of Brown County Roads	Denied without Prejudice to later submittal if 20 X Determined Favorably to ZAC-ZACK.
20(c)(5)-(14)		Adequacy of Roads (Two contentions are numbered "(9)" - the second is renumbered "(9A)".)	Admitted.
20(d)		Adequacy of Roads	Withdrawn.
20(e)(1)-(2)		Brown County Police and Fire Personnel	Denied without Prejudice to later submittal if 20 X Determined Favorably to ZAC-ZACK.
20(e)(3)-(15)		Police and Fire Personnel	Admitted.
20(f)(1)		Flooding of the Ohio	Admitted.
20(g)(1)	20(h)(1)	Inclement Weather	Admitted.
21(a)		School Personnel	Withdrawn.
(b)(1)		Psychological Stress in Schools	Denied.
(b)(2)		Potassium Iodide for Children	Admitted.
(c)(1)-(4)		School Buses	Admitted.
(d)(1)-(4)		Evacuation of Schools during Busing Periods	Admitted.

Contention Number	Number in 11/13/81 Filing	Subject	Status
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ZAC-ZACK Contentions (continued)

(e)(1)-(3)		Availability of School Bus Drivers	Admitted.
22		Warning System	Withdrawn.
23(1)-(5)		Education of Public	Admitted.
24(1)-(10)		Medical Facilities and Treatment	Admitted.
25(1)		Disclosure to Clermont County of Information Furnished Cincinnati	Denied.
(2)		Collection of Baseline Health Data by Clermont County	Denied.
(3)		Monitoring of Effect of Releases on Agriculture	Admitted to Extent § 50.47(b)(9) Matters are Raised.
(4)		Monitoring of Milk	Admitted to Extent § 50.47(b)(9) Matters are Raised.
26(1)		Independent Monitoring by Local Government	Denied.
27(1)		Independent Monitoring by Local Government	Denied.
28(1)		Independent Monitoring	Denied.
29(1)		Meteorological Monitoring	Withdrawn.
30(1)		Protective Gear for the Public	Denied.
31(1)		Local Governments Lack Financial Resources	Denied.
32(1)		Public Participation in Drill	Denied.

Contention Number	Number in 11/13/81 Filing	Subject	Status
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City of Mentor

33 - 36M	1 - 4M	Emergency Planning	
33	1	Mentor Not Included in Plan Formulation	Denied.
34	2	Use of Standard Operating Procedures	Admitted.
35	3	Indiana Not Included in Ingestion Exposure Pathway Planning	Admitted.
36	4	Defects in Kentucky and Campbell County Plans	
36A	4A	Cross-Reference to NUREG-0654	Denied.
36B	4B	Ten Defects (subsections i - x) in Stone & Webster Evacuation Time Studies	Admitted; Consolidated with 20 (c) (10).
36C	4C	Alternate Evacuation Routes	Admitted; Consolidated with 20 (c) (7).
36D	4D	Unsuitability of Ky. Route 8 for Evacuation	Admitted; Consolidated with 20 (c) (8).
36E	4E	Evacuation of Schools	Admitted; Consolidated with 21.
36F	4F	Storage and Distribution of Potassium Iodide	Admitted; Consolidated with 24 (8).
36G	4G	Evacuation of Those in Need of Assistance	Admitted; Consolidated with 20 (c) (9).
36H	4H	Capabilities of Eastern Campbell Volunteer Fire Department	Admitted; Consolidated with 20 (e) (7).

Contention Number	Number in 11/13/81 Filing	Subject	Status
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City of Mentor (continued)

36I	4I	Public Notification System	Admitted; With a Deletion.
36J	4J	Storage of Animal Feed	Denied.
36K	4K	Monitorized Control of Public Water Supplies	Admitted.
36L	4L	Communications Between Zimmer Station and Mentor	Denied.
36M	4M	Role for Mentor in Drill	Denied.

APPENDIX C
(continued)

**REVISED CONTENTIONS — EMERGENCY PLANNING AND
MONITORING**

(Approved November 25, 1981)

20 X] Authority for the requirement that Brown County, Ohio, be included into the emergency planning response of the plume exposure zone is as follows: Brown County is situated approximately 10 and 1/8th miles generally east from the Zimmer Station; the current plume exposure zone depicted on emergency planning zone maps presented in the local plans terminates the plume exposure EPZ at the Brown and Clermont Counties border; the conditions of the topography and land characteristics placing the involved areas of Brown County in an elevation plane in excess of 400 feet above the Zimmer Station; access routes for the affected Brown County population are in part common for certain affected population in Clermont County (particularly U.S. 52 and the population of Clermont County involved in Designated Sector SE(G), ESE(F) and E(E) involving an approximate Clermont population of 2,518 [Clermont Plan, §II-1, at pp. II-1-17 and II-I-22] in which that affected population is routed from U.S. 52 to S.R. 133 and subsequently alternate S.R. 222 and 232 [Clermont Plan §II-I, at p. II-I-18] requiring a greater distance and travel time within the plume exposed area); the condition that in Brown County there are no response needs, capabilities or implementation of emergency resource personnel for an emergency response to a Zimmer accident or event; and 10 CFR §50.47 (c)(2), which provides, *inter alia*:

[g]enerally, the plume exposure pathway EPZ for nuclear power plants shall consist of an area about 10 miles [16 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.*" (Emphasis supplied by writer.).

See also 10 CFR §50.33(g) to the same effect.

20. The evacuation plans and the emergency response capabilities for the plume exposure pathway of the Emergency Planning Zone consisting of, and involving, parts of Clermont County, Ohio, and Campbell County, Pendleton County and Bracken County, Kentucky, including the municipal and village political subdivisions therein, are inadequate in their respective failures to timely and promptly evacuate the population within that zone to appropriately reduce, or minimize, radiation exposure for the protection of the safety and health of the public, due to:

(20 a 1] - 3] denied without prejudice to later submittal if 20 X] determined favorably to ZAC-ZACK.)

20 b]. The absence of adequate communication system, or systems, both telephone and radio, for the coordination and direction of evacuation and receipt and dissemination of data and information within any involved county, for communications between the respective county EOC and the emergency response support groups and between personnel of the emergency response support groups.

Specifically.

20 b 1] - 3] denied without prejudice to later submittal of 20 K] determined favorably to ZAC-ZACK.)

20 b 4]. Radio communications between base and mobile radios utilized by Clermont County emergency response support groups within an approximate area of four miles of the Zimmer Station in the near environs of U.S. 52 paralleling the Ohio River of incapable of radio transmission due to topographical and land characteristics of that area creating blank, or void, radio transmission whereby radio signals meet natural terrain barriers. [No plan provision].

20 b 5]. The Clermont County Emergency Plan provides for communications among some of its emergency resource agencies by non-dedicated telephone line only, involving limited trunk service to certain agencies (one to four telephone lines), utilization of long distance telephone lines involving General Bell telephone systems, and as such this portion of the communications plan does not provide a reasonable assurance that commu-

nications necessary to a timely and prompt evacuation can be implemented, especially where limited trunk lines for telephone usage are subject to overload, e.g.,

20 b 5 i]. Communications between the Superintendent of the Clermont County Board of Education-County EOC and the Superintendent of the Felicity-Franklin School District requires use of limited long distance trunk line, subject to overload, between Bell and General telephone systems: Felicity-Franklin Superintendent has three trunk lines for use in communications between the County Superintendent and to summon school bus drivers (approximately 18) to the school site for student evacuation;

20 b 5 ii]. The Superintendent of Bethel-Tate School District has two telephone trunk lines, subject to overload, for use in communications between the County Superintendent and to summon school bus drivers (approximately 15) to the school site for student evacuation;

20 b 5 iii]. The Superintendent of the New Richmond School District has four telephone trunk lines, subject to overload, for use in communications between the County Superintendent and to summon school bus drivers (approximately 17) to the school site for student evacuation and for telephone communications to the Monroe and Pierce Elementary Schools within the District, each school has two telephone trunk lines;

20 b 5 iv]. The telephone trunk lines for each of the affected school districts will be overloaded during emergency situations due to parental telephoning into the schools;

20 b 5 v]. All notifications to the County Superintendent, affected school districts, reception school districts, school district transportation supervisors, and school district bus drivers is by non-dedicated, existing telephone trunk lines. [Plan, §II-E, Table E-1, pp. II-E-3 and 5; §III-A, p. III-A-2; §III-C, pp. III-C-1 through 3].

20 b 6]. The Campbell County Emergency Plan provides for communications among some of its emergency resource agencies by monitor radio and non-dedicated telephone lines, involving limited trunk service to certain agencies (one to four telephone lines), subject to overload, and as such this portion of the communications plan does not provide a reasonable assurance that communications necessary to a timely and prompt evacuation can be implemented, e.g.,

20 b 6 i]. Communications to County School Superintendent by monitor radio and subsequent non-dedicated telephone use (four trunk lines to Superintendent);

20 b 6 ii]. County Superintendent's notification to five elementary and one middle school, including A. J. Jolly Elementary School within two miles of the Zimmer Station, is by a single non-dedicated telephone line into each of the six schools, each trunk line into each school is subject to overload;

20 b 6 iii]. The County Superintendent's notification to the Alexandria Elementary School and the bus garage is by two non-dedicated telephone lines into each facility, both of which are subject to overload;

20 b 6 iv]. The County Superintendent's four non-dedicated trunk lines are the means of communications to 54 regular and seven substitute bus drivers to summon school buses to nine school sites for student evacuation;

20 b 6 v]. The telephone trunk lines for each of the affected schools, the Superintendent and the bus garage will be overloaded during emergency situations due to parental telephoning into the schools;

20 b 6 vi]. All notification (except initial notification to Superintendent by monitor radio) and communications between schools, bus drivers and transportation supervisor is by non-dedicated, existing telephone trunk lines. [Plan, Basic Plan, pp. V-5,6; Annex B, Communications, p. B-3; Annex C, Notification & Warning, p. C-4].

20 b 7]. The Pendleton County Emergency Plan provides for notification and communications of and between emergency resource personnel by monitor radio and in most instances by pager or non-dedicated telephone absent reasonable assurance that contact can be made by pager (distance limitation in transmission) or by telephone, and as such this portion of the communications plan does not provide a reasonable assurance that communications necessary to a timely and prompt evacuation can be implemented, e.g.,

20 b 7 i]. Judge/Executive notified from DES Director by pager or telephone; DES Director notified from Communications Coordinator by pager or telephone; County EOC personnel to be notified by telephone, pager, or radio;

20 b 7 ii]. DES Director contact, communication and notification with Fire and Rescue Coordinator by means of telephoning an answering service and thereafter the answering service "contacting" (assumption is by telephone) that coordinator who will in turn communicate with the DES Director by telephone;

20 b 7 iii]. Communications to fire departments will be by telephone, whether between fire company members or between fire chief and Fire and Rescue Coordinator (only the Falmouth Fire Department has radio contact with the EOC);

20 b 7 iv]. Notification to the Law Enforcement Coordinator from the DES Director by pager or telephone;

20 b 7 v]. Notification to key emergency response personnel by pager, telephone, or answering service, and communications with certain emergency response personnel is inadequate to present reasonable assurance that notification and subsequent communications can be made and sustained where limited to non-dedicated commercial telephone line providing for

single telephone trunk. [Plan, Annex A, Direction and Control, pp. A-5 through 7 and 9; Annex C, Notification & Warning, p. C-2-1].

20 b 7 vi]. Notification of special concerns by monitor radio (except Butler and Grant's Lick Nursing Homes and Black River Mining Company which is silent as to notification) is Northern Elementary School, other communications by commercial radio. [Plan, Annex F, Protective Actions, pp. F-9-1 and 2].

20 b 8 j]. The Bracken County Emergency Plan provides for notification and communications of and between emergency resource personnel by monitor radio and in most instances by pager or non-dedicated telephone absent reasonable assurance that contact can be made by pager (distance limitation in transmission) or by telephone, and as such this portion of the communications plan does not provide a reasonable assurance that communications necessary to a timely and prompt evacuation can be implemented, e.g.,

20 b 8 i]. Judge/Executive and DES Director notified from Communications and Warning Coordinator by pager or telephone; County EOC personnel to be notified by telephone, pager or radio;

20 b 8 ii]. Fire and police emergency response personnel to be notified by pager; field fire response personnel will communicate with the County EOC by telephone;

20 b 8 iii]. Law Enforcement Coordinator will be notified by pager or telephone;

20 b 8 iv]. Notification to key emergency response personnel by pager and communications by telephone;

20 b 8 v]. Notification to School Preparedness Coordinator and to Western Hills Elementary School by monitor radio, other communications by telephone, including summoning of school buses for evacuation of students. [Plan, Annex A, Direction & Control, pp. A-6, 13, Annex C, Notification & Warning, C-2-1; Annex F, Protective Actions, pp. F-9-1 and 2].

20 c j]. The public roadways, as access roads for the evacuation of the EPZ populace of Clermont County, Ohio, and Campbell, Pendleton and Bracken Counties, Kentucky, are inadequate to promptly and timely evacuate the involved population.

Specifically.

20 c 1 j]. The Clermont population in Designated Sectors SSE(H) and SE(G), a permanent population of approximately 800, proceed in an easterly direction from the Zimmer Station on the major evacuation route to U.S. 52, through Washington and into Franklin Townships to S.R. 133, the junction of which is not an access control site and then proceed in a

northerly direction on S.R. 133, a distance in excess of 10 miles to S.R. 125 at Bethel, Ohio, at which point they are emerging from the plume exposure area (an approximate distance of 11-mile exposure of the plume on U.S. 52 and an approximate distance of 13-mile exposure of plume on S.R. 133, for a total approximate distance of plume exposure of 24 miles); or alternatively the evacuees may proceed northerly on S.R. 133 to the Village of Felicity and then proceed on S.R. 222 to S.R. 232 to S.R. 125 at Bethel (an approximate distance of 11-mile exposure of plume on U.S. 52 and an approximate distance of 20-mile plume exposure on S.R.s 133, 222 and 232, for a total approximate distance of plume exposure of 31 miles); or alternatively after traveling on S.R. 222 to remain on that route to its intersection with S.R. 125 near Bethel (for a total approximate distance of plume exposure of 29 miles). From entry onto S.R.s 133, 222 and 232 there are no control access control points until the evacuees reach S.R. 125. At 0.25 miles east of the intersection of U.S. 52 and S.R. 133, on U.S. 52, there is a manned access control to direct traffic flow return to S.R. 133. The population east of the state access control point (on U.S. 52 0.25 miles east of S.R. 133) involving the populations situated east of S.R. 133 and the Village of Utopia and approximately 40 roads servicing residents in the previously stated Designated Sectors and the additional Designated Sectors of E(E), ENE(D) and NE(C), are not within the evacuation route designated and must either proceed into the plume area by proceeding by roadways intersecting S.R. 133 or following county and township roads to S.R. 125 west of Bethel, or proceeding directly into Brown County. The aforesated designated evacuation route fails in its implementation to timely and promptly evacuate this portion of the Clermont population from the plume exposure zone. [Clermont Plan, §II-I, Protective Response, pp. II-I-17, 18, 22 and 23].

20 c 2]. The Clermont population in Designated Sectors (portions) E(E), ENE(D), NE(C), NNE(B) and N(A), constituting the populations of Monroe and Washington Townships, approximately 1,639 permanent population, are to proceed by alternative routes: one, a southerly direction to U.S. 52 toward the Zimmer Station and thence west on U.S. 52; two, proceed in a northwesterly direction to S.R. 132, thence north on S.R. 132 to S.R. 125; or, three, a northeasterly direction to S.R. 222, thence northerly on S.R. 222 to S.R. 125; in which the roadways servicing that population for travel to an evacuation route consists of two state roadways and approximately 38 county and township roadways. Manned access control points are located on S.R. 756, 0.25 miles south of Brown Road, on Laurel-Point Isabel Road 0.1 miles west of S.R. 222, and on S.R. 743, 0.5 miles west of S.R. 222 in Washington Township to direct traffic flow, and at the junction of S.R.s 232 and 756 S.R. 232 0.5 miles north of Ireton

Trees Road and at the juncture of Franklin-Laurel and Carnes Roads in Monroe Township. The county, township and two state roadways for travel to an evacuation route situated in the aforesaid sectors are narrow, winding, hilly and hazardous roadways unsupervised for traffic flow and control, except limitedly manned as noted, for prompt, safe and timely evacuation of the permanent population within the area. The road configurations will not afford directions by radio to that population of the numerous roadways that the population must follow to correct evacuation routes and a safe evacuation in a prompt manner in the appropriate direction of travel cannot be implemented. [Clermont Plan, §II-I, Protective Responses, pp. II-I-17, 18, 22 and 23.]

20 c 3]. Clermont population in Designated Sectors N(A), NNW(R) and NNE(B), consisting of a portion of Monroe Township, Ohio Township and a portion of Pierce Township (a permanent population of 10,596), are to proceed either to U.S. 52, thence in a westerly direction and out of the plume area; or, to proceed to S.R. 132, thence in a northerly direction to S.R. 125, in which the roadways for travel to an evacuation route servicing that population consists of one state roadway and 27 county and township roadways. There are two access control points on the perimeter of the plume zone at the junction of S.R. 749 and Cole Road and on Jenny Lind Road, 0.25 miles south of Cole Road, but no access control points within the affected township areas. The roadways for travel to an evacuation route in the aforesaid sector are narrow, winding, hilly and hazardous roadways unsupervised for traffic flow and control, except limitedly manned as noted, for prompt, safe and timely evacuation of the permanent population within the area and a safe evacuation in a prompt manner in the appropriate direction of travel cannot be implemented. [Clermont Plan, §II-I, Protective Response p. II-I-17, 18, 22 and 23.]

(20 c 4] denied without prejudice to later submittal if 20 X] determined favorably to ZAC-ZACK.)

20 c 5]. The Clermont permanent population within the plume area is rural, generally serviced by narrow and winding township roads without center line and involving country lanes approximately eight feet in width and ranging from 200 to 700-foot depth from the township roadway. The use of CART buses, "as available", cannot reasonably assure prompt transportation for evacuees without vehicles assembled at pickup sites. School buses cannot be used for public transportation; §§3313.172 and 3327.14, Revised Code of Ohio, preclude use of school buses for public transportation, except transportation of senior citizens and adult education groups, rendering the use of school buses for public transportation unlawful. Vehicles used to afford transportation of handicapped and individuals without vehicles must be capable of driving country lanes, removing the

ability of buses, CART or otherwise, from traveling such lanes or negotiating turnaround at residences. The timely and safe evacuation of the population without vehicles cannot be implemented. [Clermont Plan, §II-I, Protective Response, p. II-I-5; §III-A, County Agencies (Gen), pp. III-A-1 and 2; §III-C, County School Districts, pp. III-C-1 and 2].

20c 6]. The evacuation time estimates for evacuation of the Clermont population, ranging from 1.0 to 3.9 hours, do not recognize the roadway circumstances of Clermont County and evacuation routing, the location of residences from public roadways, fails to take into account roadway blockage due to vehicular mishap, weather circumstances of the area as reflected by the Clermont DSA time study estimating evacuation times within a range of 2.5 and 77.5 hours, fails to consider the character of the population (unprepared as to provisions to be transported, inadequate fuel in evacuation vehicle, single vehicle families in which vehicle is at work site, attempts to make telephone contact with police agency to determine if emergency is a test or actual, detouring from evacuation routes to gather family members not at home, family returning to home from off-home site, panic reaction, vehicular mishap, impassable roadways due to flooding, ice or snow and inadequate roadways leading to evacuation routes), paragraphs 1] through 3] and 5], *supra*, and as such the time estimates are grossly underestimated and the population cannot be evacuated within the mandatory time limitations. [Clermont Plan, §II-I, Protective Response, p. II-I-15; Table 3-2, p.3-7 of Attachment I-2, Stone & Webster Time Study].

20 c 7]. The evacuation of the Campbell County population directed in a generally north direction of Persimmon Grove Road to proceed in a generally northwesterly direction on evacuation routes Ky 10 and Ky 8 are inadequate where the plume pathway of radiation release from the Zimmer Station is generally northwesterly proceeding in the same path as the evacuation routing, and is inadequate in the failure to evacuate that portion of the population away from the plume pathway; and the evacuation of the Campbell County population directed in a generally south direction of Persimmon Grove Road to proceed in a generally westerly direction on evacuation routes 1121, 1280 and U.S. 27 are inadequate where the plume pathway of radiation release from the Zimmer Station is generally westerly proceeding in the same path as the evacuation routing, and is inadequate in the failure to evacuate that portion of the population away from the plume pathway. Implementation of the evacuation under the stated circumstances provides no reasonable assurance that the health and safety of the affected population is protected. [Campbell Plan, Annex F, Protective Actions, p. F-14-1.]

36 C] There are no provisions for alternate evacuation routes or for evacuation in opposite directions on the provided routes in consideration of

different radioactive plume directions, traffic congestions, or impassable roadways. Maps in Annex F of both plans have arrowheads pointed inexorably in fixed directions and the Kentucky Division of Disaster and Emergency Services has publicly stated that no consideration whatsoever will be given to changing the plans in this respect. Since Appendix 2 of NUREG-0654/FEMA-REP-1 is devoted entirely to meteorological measurements and predictions of atmospheric effluent transport and diffusion and criterion J-2 provides alternate evacuation routes for onsite individuals, the regulations clearly imply, and common sense dictates, that the general public should be able to flee away from a radioactive plume rather than be forced to pass through it.

20 c 8]. Campbell evacuation routes 1121, California Cross Road and Persimmon Grove Pike are narrow, winding and hilly with steep inclines; Lickert Road has four 90° turns and a narrow bridge impeding evacuation and where it intersects U.S. 27 there is no access point control to direct traffic flow resulting in traffic blockage or accident; Ky 8 is narrow without road berm, or shoulder, and approximately one-half mile southeast of Oneota for an approximate distance of one-fourth of a mile the road has eroded and been without repair for a substantial period; Wesley Chapel Road and 1197 are narrow, hilly ridge roads; Ky 10 is a narrow winding ridge road and parallels 12-Mile Creek and during flooding this portion of Ky 10 is impassable; and the approximate 50 rural service roads that the population must travel to evacuation routes are approximately 12 feet wide without centerline, some gravel roadways leading to evacuation routes, due to topography and land characteristics, are not capable of affording prompt and timely evacuation of the population. [No plan provision].

36 D] A designated major evacuation route, Kentucky Route 8, is dangerous in places for ordinary use and obviously unfit for emergency evacuation purposes. In particular, south of Twelve Mile Creek the road is built into the side of a steep hill and is frequently subject to slippages, some of them so severe that the north bound lane has been practically unusable for weeks at a time. Piles have been driven recently in an effort to support the roadway, but the road surface is dangerously irregular and convoluted and would be particularly hazardous during emergency evacuation conditions.

20 c 9]. There is an inadequate number of school buses to timely and promptly evacuate students of the nine schools within Campbell County subject to plume exposure, and during school session evacuation the use of school buses as vehicles for evacuation of the general public without transportation is incapable of affording timely and prompt evacuation of that segment of the population; there are no posted school bus stops or

routes and there is no plan provision to educate the public where they are to assemble for school bus transportation to afford timely and prompt evacuation of that segment of the population; the roadways within approximately eight miles of the Zimmer Station are inadequate for TANK bus travel and maneuverability. The plan is not capable of being implemented in a timely and safe manner to evacuate that portion of the population without personal vehicles. [Campbell Plan, Basic Plan, pp. 5 and 6; Annex, Protective Actions, p. F-9-1].

36 G) Plans for the safe and timely evacuation of people without personal vehicles and for those who are elderly, handicapped, confined or otherwise incapable of evacuating themselves are rudimentary, inadequate, undeveloped, and unworkable. The proposed Campbell County plan for such people calls for their evacuation by school buses and through the assistance by the Eastern Campbell County Volunteer Fire Department (Annex F, Appendix F-9, II, p. F-9-1 and III-C, p. F-9-3). The schools lack sufficient buses to evacuate school children (see Contention 36 E, consolidated with Contention 21]) and can not provide buses for this purpose; the fire department is not capable of providing this assistance (see Contention 36 H, consolidated with Contention 20 e 7].)

20 c 9A]. Access control points are inadequate in number and placement to direct and control traffic during evacuation and the plan does not provide any reasonable assurance that an adequate number of police and other support groups are available to discharge the responsibility and police and support groups are insufficient in number to be timely deployed to control evacuation traffic. [Campbell Plan, Basic Plan, p. V-7; Annex F, Protective Actions, pp. F-10-1 and 2; Annex G, Law Enforcement, p. G-1-1: other than a statement of the identity of police units, no information is provided as to number of personnel, vehicles and equipment to provide reasonable assurance that the plan is capable of being implemented].

20 c 10]. The evacuation time estimates for the evacuation of the Campbell population, ranging from 1.0 to 2.9 hours, as performed by Stone & Webster, and ranging from 1.25 to 11.25 hours, estimated by Kentucky DES, do not recognize the roadway characteristics of Campbell County, the location of residences from public roadways, and fail to consider the character of the population (unprepared as to provisions to be transported, inadequate fuel in evacuation vehicles, single vehicle families in which the vehicle is at the work site, attempts to make telephone contact with a policy agency to determine if emergency is a test or actual, detouring from evacuation routes to gather family members not at home, family returning to home from off-home site, panic reaction, vehicular mishap, impassable roadways due to flooding, ice or snow, inadequate

roadways leading to evacuation routes, and the character of evacuation roadways as to topography and land characteristics), and as such the time estimates are grossly underestimated and the population cannot be evacuated with the mandatory time limitations. [Campbell Plan, Annex F, Protective Actions, Appendix F-18, pp. 3-6 and 3-7.]

36 B] The Stone and Webster evacuation time study (Kentucky plan: Annex F, Appendix F-5 and Campbell County plan: Annex F, Appendix F-18) is deficient in several respects and gives a falsely optimistic impression of the ability of the people to evacuate in a safe and timely manner during a radiological emergency. [In the following recitation the parenthetical citings after sub-parts i, viii, and x refer to clarifying addenda that follow this contention; all others refer to requirements in Appendix 4 of NUREG-0654/FEMA-REP-1 by section, part, and page number.]

The study:

i) grossly underestimates evacuation times and the conclusions are not supported by the assumptions (Addendum 1).

ii) does not give estimates of evacuation times for the segment of the non-car-owning population dependent upon public transport (IV-B, p. 4-9).

iii) does not indicate the critical assumptions which underlie the time estimates (e.g., day versus night, workday versus weekend, peak transient versus off-peak transient, and evacuation on adjacent sectors versus non-evacuation) (IV-A, p. 4-7).

iv) does not address the relative significance of alternative assumptions (IV-A, p. 4-7).

v) does not make evacuation time estimates for each special facility on an individual basis (II-C, p. 4-3; IV-B, p. 4-10).

vi) does not consider the impact of peak populations including behavioral aspects (IV-B, p. 4-10).

vii) does not make specific recommendations for actions that could be taken to significantly improve evacuation time (V, p. 4-10).

viii) contains errors in measurements of road widths that could influence calculations of road capabilities and result in additional underestimations of evacuation times (Addendum 2)

ix) does not contain comments by the principal organizations resulting from their review of a draft submittal of the study (V, p. 4-10).

x) contains unresolved conflicts of great proportions between evacuation time estimates by Stone and Webster and those by the Kentucky Disaster and Emergency Services, the Ohio Disaster Services Agency, and the Clermont County Disaster Services Agency (Addendum 3)

Clarifying Addenda To Contention 36 B

1) At the prehearing conference Mentor used the following example. The best estimate evacuation time with prompt notification time for the 0-2 miles zone in Sector II is given as 1.0 hours (Table 3-1). An evacuation time is the sum of the notification, preparation, and travel times (p. 4-1) for the 0-2 miles zone in Sector II; notification time is .25 hours (Table 3-1) and preparation time is .50 hours (p. 5-7), whose sum is .75 hours. This leaves a travel time (not given) of .25 hours (1 hour evacuation time minus .75 hours preparation and mobilization). Assuming an evacuee must travel 8 miles to get outside the plume exposure EPZ, he must travel at 32 miles per hour (8 miles in .25 hours). The study, however, assumes a rate of only 25 miles per hour (p. 5-7). The study further assumes a distance of twice the radial distance to the edge of the evacuation zone (p. 4-1).

The evacuee, then must travel at 64 miles per hour rather than 25 miles per hour to reach to edge of the plume exposure pathway.

The applicant has since then interpreted "edge of the evacuation zone" to mean "edge of the 0-2 miles zone" rather than "edge of the 10 miles evacuation zone" which Mentor had assumed. Under this interpretation the above calculations are obviously not correct. However, because the City has not had time to study the rest of Table 3-1 with this interpretation in mind and because this interpretation raises new problems about warning times, plume speeds, road capacities, etc., that influence evacuation times, the City is not ready to withdraw this part of this contention.

2) Table 5-1 (pp. 5-9 to 5-11) names evacuation routes and gives the number of lanes, width of lanes, and the average capacity in vehicles per hour of each road. A spot check of road widths in Campbell County (SR 8, SR 10, US 27, and CR 1121) revealed that not one of them is as wide as the table indicates.

Evacuation Route	Width Implied by Table 5-1 (ft.)	Actual Width by Spot Check (ft.)
SR 8	24	20
SR 10	20	17.25
US 27	24	22
CR 1121	20	15.5

Table 5-1 gives the average capacity as 1000 vehicles per hour for each of these roads, but does not indicate whether this figure is for volume in one direction or both directions, and cites *Transportation and Traffic Engineering Handbook* as an authority. If 1000 vehicles per hour average

capacity is for travel in one direction (a reasonable assumption, since the discussion is about evacuation in one direction), cursory look at the reference shows that this figure is pure fantasy. Table 8.9 p. 331) gives the *maximum* service volume in *both* directions under *ideal* conditions on two-lane rural highways as 2000 vehicles per hour. Short passing sight distances, low average highway design speeds, narrow lane widths and small lateral clearances, the combination of low performance vehicles and grades, as well as driver psychology are among the factors that reduce service volumes considerably. If the 1000 vehicles per hour average capacity is for travel in both directions, then that qualification is inapplicable and inappropriate in the context of one-way evacuation and the figure is still inflated and subject to modifying factors.

3) Table 3-2 (p. 3-7) compares Stone and Webster evacuation time estimates and those of KyDES, ODSA, and CCDSA. With two exceptions the Stone and Webster times are invariably lower than the others. Differences between Stone and Webster and KyDES with prompt notification considered range from .25 hours to 7.85 hours. Differences between Stone and Webster and ODSA and CCDSA without prompt notification range from .7 hours to 60.8 hours. In a "run for your life" situation when minutes count, these differences between planners raise the question of the veracity of radiological emergency response plans written by the same people.

20 c 11]. Pendleton County evacuation routes Corntown Road, Ky 10, Flour Creek Road, 159, Concord Caddo Road and Falmouth Lenexburg Road are ridge roads, steep, narrow, winding and in areas limited to maximum speeds of 25 mph; and the approximate 20 rural service roads that the population must travel to evacuation routes are approximately 12 feet wide without centerline, several gravel roads, winding and hilly; the evacuation routes and access roadways leading to evacuation routes, due to topography and land characteristics, are not capable of affording prompt and timely evacuation of the population. [No plan provision].

20 c 12]. Evacuation time estimates are inadequate for the reasons presented in paragraph 6] and 10] *supra* and this plan again sets forth the Stone & Webster study.

20 c 13]. Bracken County evacuation routes Ky 10, 1109 and Ky 8 are ridge roads, steep, hilly, narrow and winding and the approximate 10 rural service roads that the population must travel to the evacuation routes are approximately 12-foot in width without centerline, winding and hilly and incapable of affording prompt and timely evacuation of the population. [No plan provision].

20 c 14]. Evacuation time estimates are inadequate for the reasons presented in paragraphs 6] and 10] *supra* and this plan again sets forth the Stone & Webster study.

20 d]. Withdrawn.

20 e]. The involved counties of Ohio and Kentucky possess no professional, full-time fire and life squads, relying totally upon volunteer, part-time personnel whose primary concern and responsibility is to other endeavors and who have limited training; and the involved counties rely in many respects upon volunteer, auxiliary policemen to supplement inadequately staffed local police units and the total full-time and auxiliary police personnel, by number, are inadequate to provide immediate and necessary police control in an emergency situation and the emergency resource personnel of police, fire and para-medical are inadequate for utilization during initial emergency and evacuation.

Specifically.

(20 e 1] and 2] denied without prejudice to later submittal if 20 X] determined favorably to ZAC-ZACK.)

20 e 3]. Clermont County has only volunteer fire squads. Fire personnel are assigned supporting access control action as available and no dependable count is furnished by the plan. Fire personnel within the plume area will provide door-to-door verification of population notification consisting of 113 volunteer personnel and 28 vehicles with an additional combined fire and life squad group of 134 (fire personnel numbers not stated in plan) to perform tasks in either the plume or relocation area and equipped with 18 vehicles. The plan fails to indicate the number of volunteer fire personnel that would or could be available at the time of emergency. The approximate number of fire personnel available on shift at notification for initial service would be 38. The miles of roadway within the plume area, together with the miles of country lanes involved, remove any reasonable assurance that fire personnel of 38 to 267 (assuming all volunteers could and would immediately respond) to facilitate door-to-door verification of notification within the plume area and the miles of roadway present. The plan presents no reasonable assurance or upon implementation that any one, more or all of the volunteer fire personnel would or could be present to assume the responsibilities assigned, or that such personnel would or could leave their regular employment and family responsibilities during evacuation. [Clermont Plan, §II-I, Protective Response. p. II- I-6; §III-B, Emergency Services, pp. III-B-2, 5 and 7.]

20 e 4]. Clermont County has only volunteer fire squads in which only Goshen and Miamiville have trained para-medics. The 119 life squad personnel within the plume area possess four mobile and no portable radios and no information is provided as to vehicles or equipment possessed by the plume area life squads. The plan fails to establish how many, if any, of the staffs. The plan fails to indicate, with any reasonable assurance, or

upon implementation, that any one, more or all of the volunteer life squad personnel would or could be present to assume any responsibility in the plume area during evacuation or that such personnel would or could leave their regular employment and family responsibilities during evacuation. [Clermont Plan, §III-B, Emergency Services, pp. III-B-4, 5 and 9.]

20 e 5]. The County Sheriff has 12 road patrol deputies, the local police have 14 full-time officers, with support from Pierce Township police in the plume area providing an additional nine full-time police officers. The Ohio State Patrol has approximately 25 patrolmen at the Batavia Post. In addition to the foregoing, there are 16 volunteer police officers associated with the local police departments. At the time of notification of an emergency mandating evacuation there would be approximately four deputy sheriffs, seven local policemen and eight State Patrolmen on duty, for a total of 19 local police officers available to provide emergency response resources to man access control points and direct traffic and maintain order within the plume evacuation area. The Clermont Plan as drawn and to be implemented provides no reasonable assurance that local police are capable of performing the response responsibility assigned, especially with the necessity to timely and safely direct and control evacuation traffic. Off-duty local police would be available on the ability to summon such officers to duty based upon the location of such officers and the presence of a point of notification contact. The plan presents no reasonable assurance (nor can it be reasonably implemented) that there is an ability to contact and summon off-duty local police officers to respond within the time restrictions present to promptly and safely direct the evacuation of the population. The time restrictions necessary to activate and deploy National Guardsmen or to summon police officers from contiguous counties provides no reasonable assurance in the plan or upon implementation, that such police and guard units can respond within time to support evacuation of the population. The number of police officers and the limitation of police vehicles fails to provide any reasonable assurance that local police are capable of discharging the assigned responsibility. The number of access control points for the direction of evacuation traffic is inadequate to properly, safely and timely direct the evacuating population, together with the absence of any access control points manned by police or other support emergency response personnel in the intersecting roads for travel by evacuees to evacuation routes. [Clermont Plan, §II-1, Protective Response, pp. II- I-6, 15, 18, 23 and 24; §III-B, Emergency Services pp. III- B-1, 5 and 6)].

20 e 6]. The Clermont County Sheriff is assigned the primary command authority of all county activities in response to an emergency,

including evacuation, and shall direct all primary and support agencies. The Sheriff shall direct all personnel involved in access control, including local police, local fire and State Patrol. A county sheriff is empowered, and thereby limited, by §311.07, Revised Code of Ohio, to call upon the sheriff of any adjoining county and municipal and township officials in his or adjoining counties, to furnish law enforcement and fire protection, together with appropriate equipment, as necessary, to preserve the public peace and protect persons and property only in the event of riot, insurrection, or invasion. The provisions of the plan providing command authority for emergency response to a Zimmer Station event or accident is not within the provisions of §311.07(B), Revised Code of Ohio, as the same does not consist of riot, insurrection, or invasion, and the plan as drafted and to be implemented provides a power to the Sheriff of Clermont County to control local police, fire and State Patrol contrary to the laws of the State of Ohio and the provisions of the plan are unlawful. Based upon the legal status of the plan, it cannot provide either reasonable assurance of implementation, or implementation, by its assignment of command responsibility contrary to state law. [Clermont Plan, §II-A, Command & Coordination, p. II-A-1, Protective Response, p. II-I-6; §III-A, County Agencies (Gen), p. III- A-12.]

20 e 7]. The fire personnel, in part volunteer, in Campbell County are assigned the task of fire response and, "if capable," to assist other emergency response functions without clarification. The plan provides no information as to either number of personnel and vehicles or support emergency functions. The plan fails to provide reasonable assurance that fire personnel are capable of discharging emergency response roles other than fire related activity. [Campbell Plan, Annex I, pp. I-1 and 2, I-1-2].

36 H] The Eastern Campbell County Volunteer Fire Department is located about one-fourth mile outside Mentor and serves Mentor as well as an area in the southeast portion of Campbell County. The proposed Campbell County plans call for its participation in an emergency response (Annex F, Appendix F-6, p. F-6-1, Appendix F-9, III-C, p. F-9-3. Appendix F-10, III, p. F-10-1, Appendix F-11, II, p. F-11-1; Annex I, pp. I-1-I-2 Appendix I-1; and Annex M, I-B-2, p. M-1, and possibly IV-C, P. M-2, which refers to an Appendix I-2 which does not exist). This fire department has no plans for a radiological emergency response, has not participated in any state or local planning effort, has had no training for fixed nuclear facilities radiological emergencies and does not anticipate such training, has inadequate or inappropriate radiological monitoring equipment, has no radiological protective gear, and has no radio communications with the Zimmer plant and inadequate radio communications with other state and local response agencies; and there is no evidence that the other

fire departments within the 10-mile EPZ in Kentucky have adequate plans, training, and equipment to respond to a radiological emergency.

20 e 8]. Campbell County has no provision or information pertaining to rescue squads, except that rescue squads are present in the county fire departments and possess ambulances. No information is provided pertaining to training and to treat radiological injury. The plan fails to provide reasonable assurances that emergency medical technicians are prepared to provide services for the identification and segregation of radiation injury. [Campbell Plan, Annex H, Medical & Public Health, p. H-2.]

20 e 9]. The number of State and local police present and available to provide access control point manning and other traffic control direction to provide a reasonable assurance of a safe and timely evacuation of the population are inadequate in number, as well as an inadequate number of police to reasonably assure the safe and timely evacuation of A. J. Jolly State Park and Camp Sunshine. The plan fails to present any information pertaining to the number of police to be punctually available at the time of an evacuation, support police to be summoned and the times required to afford supported police assuming duty stations, or the number of police vehicles present and to be utilized in controlling evacuation. [Campbell Plan, Annex F, Protective Actions, p. F-9-2 and 3, F-1-1 and 2; Annex G, Law Enforcement, pp. G-12 and G-1-1, Annex K, Military Support, pp. K-1 and 2.]

20 e 10]. The Fire Departments in Pendleton County are volunteer and are assigned only the duty of fire emergency. All contact with county fire units is by telephone and fire companies will be activated for fire; other functions to be coordinated at the time. The plan and its implementation fails to provide any reasonable assurance that the fire companies will provide emergency response to protect the public in an evacuation. The plan presents no number of personnel or equipment available. [Pendleton Plan, Annex A, Direction & Control p. A-9; Annex I, Fire Protection/Rescue, pp. I1 and 2, I-1-1].

20 e 11]. Pendleton has no provision or information pertaining to rescue squads except that such squads are present in the three volunteer fire departments and that they are trained in rescuing fire survivors. The plan as drafted and to be implemented provides no reasonable assurance that rescue personnel can determine and segregate radiological injured persons or to provide any emergency services. [Pendleton Plan, Annex H, Health/Medical Services, pp. H-1 and 2; Annex I, Fire Protection/Rescue, pp. I-1 and 2, I-1-1].

20 e 12]. The number of State and local police and other resource support groups available to provide and man access control points and to provide traffic, together with providing traffic control and evacuation of

Kincaid Lake State Park, is inadequate to present reasonable assurance by the plan or in its implementation that the population affected will be timely and safely evacuated from the exposed area. [Pendleton Plan, Annex F, Protective Actions, pp. F-9-2, F-10-1; Annex G, Law Enforcement, pp. G-1 and 2, G-1-1].

20 e 13]. Bracken County has four volunteer fire departments, trained in fire and rescue only. Departments have standby and call up procedures and other than fire related activity, the personnel are assigned access control functions during an evacuation. The plan and its implementation fails to provide any reasonable assurance that the personnel will provide emergency response for the protection of the public during emergency. The plan presents no number of personnel or equipment available. [Bracken Plan, Annex F, Protection Actions, p. F-10-1; Annex I, Fire/Rescue Service, pp. I-1 and 2, I-1-1].

20 e 14]. Bracken County has no provision or information pertaining to rescue squads. The squads will provide ambulance service only. The plan as drafted and to be implemented provides no reasonable assurance that rescue personnel can determine and segregate radiological injuries or to provide any emergency service. [Bracken Plan, Annex H, Medical & Public Health, p. H-2; Annex I, Fire/Rescue Service, pp. I-1 and 2, I-1-1].

20 e 15]. The number of local police and other resource support groups present to provide and man access control points and to provide traffic control is inadequate to present reasonable assurance by the plan or in its implementation that the population affected will be timely and safely evacuated. [Bracken Plan, Annex F, Protective Actions, p. F-10-1; Annex G, Security and Law Enforcement, pp. G-1 and 2, G-1-1].

20 f]. During flood conditions of the Ohio River and its tributaries, access roadways to the Zimmer Power Station and access roadways for evacuation, situated in Ohio, are impassable, and in certain flooding conditions the Zimmer Station site is isolated and inaccessible to emergency vehicles and in such circumstances both population evacuation and offsite assistance to the Zimmer Station are impossible.

Specifically.

20 f 1]. At flood stage, Ohio River crest of 53 feet, U.S. 52, approximately 1/4th of a mile north of the Village of Neville is under water and impassable as to U.S. 52, Neville Spur and Maple Creek Road for an approximate distance of 1/2 mile and including Maple Creek. Near the Village of Moscow, just south of S.R. 743 by several feet, U.S. 52 is under water and impassable for an approximate distance of 1/2 mile and including Ray Run. On either side of U.S. 52 at the intersection of Laurel-Moscow Road for a distance of approximate 1/2 mile, U.S. 52 is under

water and impassable and at a 64-foot Ohio River crest the bridge over Little Indian Creek near Laurel-Moscow Road-U.S. 52 intersection, on U.S. 52 is under water and impassable. U.S. 52 at the Village of Point Pleasant, including the intersection of U.S. 52-Indian Road, intersection of U.S. 52 and S.R. 232, for an approximate distance of 1/2 mile is under water and impassable. From, and including, Clermontville Road, and its intersection of U.S. 52, portions of Clermontville Road and approximately 1/2 mile to the north, U.S. 52 is under water and impassable. From a distance of approximately 1/4 mile south of the Village of New Richmond to approximately 1/4 mile south of the intersection of Bethel-New Richmond Road and U.S. 52, U.S. 52 is under water and impassable. Within two hundred yards of U.S. 52 and to the west of U.S. 52, the streets of the Village of New Richmond are under water and impassable. The bridge located on Fagins Run Road within 50 feet of S.R. 132 is under water and impassable due to the flooding of Twelve Mile Creek and that evacuation route entry into S.R. 132 for the population northeast of the location is closed. Flooding of the Ohio River at a crest of 80 feet (1937 flood) U.S. 52 is under water and impassable from approximately 1 mile east of the Village of Neville to the west and north to within approximately 200 feet of the entrance to the Zimmer Station and within 200 feet to the north of the entrance of the Zimmer Station and continuing through the Villages of Point Pleasant and New Richmond and to the northwest of New Richmond, U.S. 52 is under water and impassable. Maple Creek Road, S.R. 743, Laurel-Moscow Road, Indian Road, S.R. 232 Clermontville Altman Road, and Frank Willis Memorial Road are all under water and impassable at their respective intersections with U.S. 52, totally precluding vehicular travel to the Zimmer Station. During flood crests of the Ohio River from 53 feet to 80 feet a range from a substantial portion of an evacuation route is impassable and vehicular travel to the Zimmer Station is limited to S.R. 743 to U.S. 52 to Zimmer to the exclusion of U.S. 52 as an evacuation route from New Richmond to beyond Neville and the isolation of the Zimmer Station. Under those circumstances, including flooding of the Zimmer EOF site, evacuation and emergency plans cannot be implemented. [No plan provision].

(Note: "20 g]" was denominated "20 h]" in ZAC-ZACK's November 12, 1981, submission.)

20 g. During inclement winter weather conditions, roadways in the involved counties of Ohio and Kentucky are impassable due to accumulations of ice and snow, rendering evacuation of the respective populations and response of offsite emergency units to the Zimmer Station impossible for substantial time periods, and the majority of access roadways for evacuation purposes remain impassable for prolonged periods of times, measured in weeks, thereby prohibiting large segments of the Emergency

Planning Zone populations of the involved counties from being evacuated promptly and timely by other means; and a large segment of the Emergency Planning Zone populations of the involved counties are unable to reach access roadways from their residences for extended time periods during the presence and continuation of large accumulations of snow, thereby precluding either their evacuation by motor vehicle or the timely and prompt evacuation by other means.

Specifically.

20 g 1]. The Ohio roadways set forth in Contention 20 c) 1), 2) and 3) and the Kentucky roadways set forth in Contention 20 c) 7), 8), 11), and 13) are rendered impassable due to ice and snow accumulations during the period December 1 to March 31 annually. The roadway crews available in each of the respective counties are not equipped to rapidly remove snow and to sand and salt to render the roadways passable. The federal and state highways in the respective counties remain impassable for periods of approximately three hours to 15 hours. County and township roadways cannot be made passable from periods ranging for two to 14 days. The topography and land characteristics, together with the roadways being hilly, narrow, steep and winding, precludes any vehicle travel, other than four wheel drive vehicles. Police vehicles were rendered useless during the winters of 1977 and 1978 and police activity was limited to one four-wheel vehicle in Clermont County and volunteer four-wheel drive operators to transport necessities to families that could not leave their residences. A majority of the population of the involved counties maintain their residences approximately 100 to 700 feet from the public roadway and vehicles at the home are inoperative and transportation by vehicle is capable only at the intersection of the residence lane with the public roadway. An evacuation during snow or ice accumulation, rendering a portion or all of the evacuation routes impassable and rendering the service roadways of township and county roadways for travel to evacuation routes impassable would result in the inability to evacuate the affected population due to impassable roadways and the absence of sufficient support vehicles present to evacuate. No county possesses sufficient snow moving, salting and sanding equipment and personnel to maintain roadways passable during snow and ice accumulation to present reasonable assurance that the population can evacuate during this seasonable condition. [No plan provision].

21. The evacuation plans for the plume exposure pathway of the Emergency Planning Zone includes 18 elementary and secondary schools situated in Clermont County, Ohio and Bracken County, Pendleton County and Campbell County, Kentucky. Evacuation plans for these schools are

inadequate to evacuate the populations of such schools in a time period required to reduce, or minimize, exposure and protect the safety and health of the children.

36 E] The several schools, public and private, located within the 10-mile EPZ in Kentucky lack sufficient buses and drivers to evacuate the school children in a fast, safe and orderly manner; the buses do not have communications equipment for use during an evacuation or for notification and instructions to drivers in the event of a radiological emergency during the picking up or delivering of school children to and from schools or during the use of buses in school activities; there is no radio communications system for warning (first alert) or for use during an evacuation between the schools and the Zimmer plant, and the various local, state and federal response agencies; there is no internal telephone system of dedicated lines between the central office and several schools; and there is no agreement between the local boards of education and the state and local radiological response planners and agencies that the schools or the response agencies have the procedures, equipment or manpower to ensure a fast, safe and orderly evacuation of school children.

The Kentucky Division of Disaster and Emergency Services has publicly stated that neither it nor its Campbell County counter-part has written or will write SOPs for the schools, but that it is the schools' responsibility to write them. There is no evidence that SOPs for schools have been written or will be written in the foreseeable future.

Despite the fact that the Campbell County school system does not have enough buses to evacuate schoolchildren simultaneously (it daily uses 54 buses to accommodate 5800 children and about half of the buses are involved in shuttle, double, or triple runs), the proposed Campbell County plan says that the school system is the "primary agency for transportation during an evacuation (Annex M, IV-A, p. M-2) and assigns the system the additional duty of patrolling the 10-mile EPZ and providing evacuation transportation for people without personal vehicles (Campbell County plan: Annex C, IV-D-1, p. C-4; Appendix F-6; Appendix F-9, II, p. F-9-1; Appendix F-9, III-A, p. F-9-2; Appendix F-18, p. 3-4, p. 3-2, pp. 4-1 and 4-2, p. 5-6).

21 a]. Withdrawn.

21 b]. The school personnel at each of the subject schools lack the training and qualifications to supervise and administer aid and comfort to school children, especially school children in the elementary schools, during evacuation and housing in reception sites during the emotional trauma occasioned by the emergency and evacuation, or to possess, control, supervise and administer the thyroid blocking agent, potassium iodide, as required, to such children.

Specifically.

21 b 1]. Denied.

21 b 2]. Ohio has employed the policy that it will administer potassium iodide to emergency workers only and not to the general public. Ohio has made no provision whatsoever to administer potassium iodide to the sensitive and vulnerable group, the child. Ohio will not monitor children or adult for a maximum period of 12 hours at reception site to determine whether such individuals have been contaminated a period too long to protect the health and safety of the public, especially the child, and at that delayed period (12 hours) the administration of potassium iodide would be of little effect. Kentucky will administer potassium iodide to emergency workers and to the general public, including children. The Kentucky plan has no provision for the implementation of the administration of potassium iodide and unless administered early its effect is diminished. No plan provides for the timely administration of potassium iodide to school children. The plan as drafted and to be implemented provides no reasonable assurance for the timely administration of potassium iodide to school children by school personnel or other emergency resource workers and as such there is no reasonable assurance that the safety and health of children will be protected in the event of contamination. [Ohio Plan, §III, Letters of Agreement, letter 14; Clermont Plan, §II-B, Emergency Response Support, p. II-B-1 (no plan provision); Campbell Plan, Basic Plan, V-8; Annex F, Protective Actions, p. 7, F-11-1; Pendleton and Bracken Plans comparable to Campbell Plan.]

21 c]. The respective school districts do not possess a sufficient number of buses for a timely and orderly transportation from the school to a receiving site during evacuation.

Specifically.

21 c 1]. The New Richmond School District has 17 buses and a student population of 2,562 students. The schools located in this district are at three different sites. The current fleet of buses requires that the student population being bused to or from school by each bus traveling three routes for each transportation of students, requiring that the bus be in transit for one hour each morning and evening routes. Monroe and Pierce Elementary students would be evacuated to the receiving site first and then return of buses for evacuation of the student population at the New Richmond site. From boarding of buses to the receiving site at Glen Este and return would consume approximately one hour before commencement of the boarding of the New Richmond school population, total evacuation time for the last students to be evacuated and out of the

10-mile zone would be approximately four hours. The number of buses necessary to timely and promptly evacuate the New Richmond District school population would be 43 buses. New Richmond is 26 buses short of the required number to effectively evacuate the school children of this district. The plan as implemented has no assurance, reasonable or otherwise, that school children can be effectively evacuated in a safe and timely manner.

21 c 2]. Bethel-Tate School District has 12 buses and a student population of 1900. The schools within the district are located at one site. The current fleet of buses requires that each bus transport students on two trips, morning and afternoon. Approximately one-half of the student population would be evacuated to Goshen schools and bus return before the remaining population could be bused. The total time for evacuation would be approximately three hours. The number of buses necessary to evacuate the student population of this district would be 31 buses. Bethel-Tate is 19 buses short of the required number to effectively evacuate the school children of this district. The plan as implemented has no assurance, reasonable or otherwise, that school children can be effectively evacuated in a safe and timely manner.

21 c 3]. Buses sent from other districts can not timely evacuate the children at the two involved Ohio school districts because of the time requirements for transportation of those buses from original site to the plume school site and the circumstances of the necessity to utilize those buses for the evacuation of the students located at the receiving sites to afford reception of the evacuees, adult and school child. [No plan provision, Ohio or Clermont Plans; see limited discussion, Clermont Plan §II-I, Protective Response, p. II-I-5; §III-A, County Agencies (Gen), p. III-A-2, §III-C, County Districts, pp. III-C-1 through 3 and 5].

21 c 4]. The Campbell County School District has nine schools at various sites, including A. J. Jolly Elementary approximately 2 miles from the Zimmer Station, it has 60 buses, 25 of which are 8 years or older and subject to mechanical failure, and a student population of 6,111 students. Students are transported to and from school in morning and evening double and triple routing. More than half of the student population would be required to remain at school while the first evacuees would be transported to a reception site and the buses returned to the schools to continue evacuation. Sixty-two additional buses would be required to provide timely and safe evacuation of the students in the affected area. In addition to the aforesaid buses, the district is required to utilize two lift buses for handicapped children, each bus required to make two trips. No other buses would be available of any type to accommodate the evacuation of the handicapped children in a timely and safe manner. The time required to

evacuate the student population would be approximately 5 hours. The plan as implemented has no assurance, reasonable or otherwise, that school children can be effectively evacuated in a safe and timely manner. [Campbell Plan, Basic Plan, pp. II-4, 7 and 8, V-5,6 and 11; Annex C, Notification and Warning p. C-4; Annex F, Protective Actions p. F-9-2.]

21 d]. The respective school districts do not possess either the capability or the number of buses necessary to afford transportation for the evacuation of school children where the emergency evacuation arises during bus transportation of children for the commencement or termination of the school day, because of the bus routing, multiple routes and trips, and a portion of the children being located at the school site and the remaining children being transported in the available buses.

Specifically.

21 d 1]. The schools involved in the New Richmond and Bethel-Tate School Districts of Ohio and the Campbell County School District of Kentucky have no means of communication to bus drivers while the driver is enroute. No present state or county plan presents a reasonable assurance or could be capable of implementation where students have been received at each school site following the first route trip and while the buses and drivers are in the course of picking up students preparatory to transporting them to school and evacuation is ordered and there is no present ability to contact the drivers and to direct them to transport the students currently on the buses to a receiving or other site during which time the driver would continue on his normal route and there would be no provision for the summoning of those buses to transport the students required to be evacuated to a receiving site.

21 d 2]. No other school district contiguous to the involved school districts could dispatch buses to the three affected districts because of utilization of their respective fleet of buses and the inability to communicate with their drivers to advise discharge of their passengers.

21 d 3]. The converse of 1] and 2] would apply during the afternoon initial routings where a portion of the student population would be on buses and the remaining student population at school without bus facility.

21 d 4]. The evacuation times set forth in the specified paragraphs of Contention 21 c] would be substantially increased and for which there is no plan or its implementation capable of presenting an assurance reasonable or otherwise, that the affected school children could be timely and safely evacuated from the affected schools. [No plan provision].

21 e]. The inability of the respective school districts to summon buses to school sites in a prompt and timely manner, or provide standby buses where school evacuation is required during the course of the school day,

the buses being located and stationed at various sites, unattended by drivers and the inadequate and ineffective means, or no means, of communication to drivers to advise of the emergency and to require bus response to the subject school to commence evacuation.

Specifically.

21 e 1]. The buses utilized for student transportation of pupils in the New Richmond and Bethel-Tate School Districts of Ohio and the Campbell County School District of Kentucky are maintained by their drivers at the driver's residence or other parking area in which the buses are parked during the school day offsite of the affected schools within the respective districts. Upon notification that it is necessary to conduct an evacuation of school children there are no means to assure the contact of all drivers to summon the buses to the school sites, except as such drivers could be reached by telephone at their homes or other normal place during the nondriving period of the school day. Where the driver could not be contacted and instructed to drive the bus to the school site, that bus would be removed from the transportation means of evacuation. School drivers during non-driving school hours are involved in other modes of employment, including farming, and in leisure pursuits, during which time they may not be accessible by telephone contact. The use of pagers to summon drivers are inadequate for transmission and notification over a distance of 12 miles and shopping areas and other areas for indulging in leisure pursuits, and areas in which one might be conducting business are beyond the 12-mile range for paging. There is no provision in any plan that provides for notification to drivers and as such there is no plan provision presenting reasonable assurance that buses can be summoned to the school site during an emergency.

21 e 2]. The location of school buses during the school day ranges from 5 to 15 miles from the school site and upon notification to the driver an approximate hour is consumed from the point of advising that evacuation is being ordered to the point that the notified driver arrives at the school site to commence transportation of evacuating children.

21 e 3]. None of the three school districts have the facility or the relationship with their respective drivers to park and maintain school buses at each respective school site. This circumstance removes any reasonable assurance that students can be timely and safety evacuated from school sites during a radiological emergency. [No plan provision.]

22. Withdrawn.

23. The characteristics of the Emergency Planning Zone portions of Clermont County, Ohio and Bracken, Pendleton and Campbell Counties,

Kentucky is such that no adequate, effective and positive education, training and advice to the public can be presented for the public's responsive, orderly and timely evacuation in the event of accident.

Specifically.

23 1]. The affected population of the involved counties ranges in education from elementary education to University trained and within the radius of the Zimmer Station is rural, farming and factory employed populace. Flooding circumstances and being within the tornado belt the population has been instructed by various means as to protective actions to be taken in the event of flood and in the event of tornado, as well as the use of sirens and other types of warning device including door-to-door notification. In each situation there has been a large segment of the population who telephone local police agencies to inquire if the siren is actual or for drill, notwithstanding the educational measures taken; and who upon being advised by door-to-door notification nonetheless neglect to take protective action until forced to do so by police authority. Inquiry to police agencies have overloaded the trunk lines within the community serviced by an assigned number of telephone trunk line. [No Plan provision.]

23 2]. Times necessary to take protective action during flood and tornado have been greatly in excess of estimated times because of the reactions of a large segment of the population. [No plan provision].

23 3]. The "Circle of Safety" as the mode of educating the affected population as to the nature of nuclear power, radiation, protective action, preparation is beyond the capabilities of the majority of the population within the affected area. Based on the average number of sentences per 100 words and the average number of syllables per 100 words the publication, in accord with Fry's Readability Graph, is within college level readability. The publication is too involved, too long and too sophisticated in its writing style to be either read or understood by a large segment of the involved population. The publication's style is comparable to text-book industry publications which do not interest the average reader and due to length frustrate the average reader and deters complete reading. Further, the publication in preliminary sentences attempting to minimize the potential hazards directs the average reader to stop reading those portions because the reader is initially informed that the matter will probably not occur and thus is extraneous information. The publication has no reasonable assurance of being read, understood or educating the population within the EPZ and thus has no educational value of informing the affected public of the matters necessary to be known by that public to

properly respond to an emergency at the Zimmer Station. [Clermont Plan, §II-F, Public Information, Attachment F-1, pp. II-F-3, et seq.; each of the Kentucky counties have the same publication present in their plans].

4 12]. The document known as the "Circle of Safety" is written in vague language and language not calculated to insure that the populace will take the appropriate protective measures in the event of a general emergency.

23 4]. The plans provide no reasonable assurance of the information to be disseminated to the public, permanent and transient, (to be mailed to all permanent population, placement in local telephone books, or the installation of signs) will be sufficient to inform or in its method of dissemination (style), will not minimize the hazards and deter the educational value of the material, or being written in such a manner that it is not readily understood by the public, e.g., "Circle of Safety." [Clermont Plan, II-F, Public Information pp. F-1 and 2; Campbell Plan, Basic Plan, p. V-2; Annex J, Public Information, pp. J-5 and 6; same information contained in Pendleton and Bracken Plans].

23 5]. There is no plan provision, or adequate assurance presented, as to the method, manner and text of the publications to be posted for the information of the transient population, particularly those visiting parks, historical sites and engaged in recreation pursuits on and near the Ohio River, all of which are within the affected area. [No plan provision].

24. Within the EPZs of the Zimmer Station, inclusive of a 50-mile radius, there are inadequate medical facilities to afford the required bed space, medical and para-medical personnel, requisite medication, screening, treatment and isolation of persons sustaining radiological injury; and the absence of adequate emergency materials, supplies, equipment and vehicles necessary for the transportation of injured persons, injured onsite and offsite, during a radiological accident.

Specifically.

24 1]. Clermont County and Cincinnati General Hospitals are the two Ohio hospitals which would provide inpatient treatment to radiologically injured individuals. The Central Ohio River Valley Association (CORVA) will provide guidance to those hospitals for development of disaster plans to include radiological emergency patient handling. Clermont County Hospital claims that it will treat radiological casualties and will institute procedures for radiation exposure treatment. Clermont County Hospital has 109 beds, but of that number would provide 45 beds by discharging ambulatory patients and transfer of others. Clermont County Hospital would transfer overage patients to Cincinnati General Hospital. Clermont

County Hospital has not sought guidance from CORVA to the date of the filing of these revised contentions. Clermont County Hospital has not revealed its hospital plan for radiological treatment. CORVA will be disbanded April 1, 1982. Clermont County Hospital has two full-time radiologists and one radiotherapist, as a consultant, and two radiation monitors and sufficient decontamination equipment for minor radiation accidents. There is nothing to indicate that Clermont County Hospital has separate, segregated emergency facilities so that other patients are not contaminated. The plan as drawn and as to be implemented does not provide reasonable assurances that Clermont County Hospital can provide adequate facilities and personnel to treat radiologically injured individuals. [Clermont Plan, §II-K, Med & Pub Health Sup p. II-K-1: §IV, Letters of Agreement, Clermont County Hospital to Conover, January 21, 1981.]

24 2]. Other than noted in paragraph 1] above, no other information is presented by the Clermont Plan pertaining to Cincinnati General Hospital. [No plan provision].

24 3]. Campbell represents that three hospitals have the capabilities to treat radiological injuries: St. Luke Hospital; Cincinnati General and the University of Kentucky Medical Center (Lexington, Kentucky, approximately one hour travel time from Campbell County); in which each has submitted a letter agreement. Only the letter from St. Luke Hospital is presented in the plan. St. Luke Hospital does not indicate its bed capacity or how many beds would be available to hospitalize radiologically injured patients. This hospital has two radiology technicians and some monitoring equipment. Isolation of contaminated patients is not indicated, nor is the presence of separate, segregated emergency facility. The plan as drawn and as to be implemented does not provide reasonable assurances that St. Luke Hospital can provide adequate facilities and personnel to treat radiologically injured individuals. [Campbell Plan, Annex H, Medical & Public Health p. H-2; Annex P, Inter-Government & Private Relations, letter, St. Luke Hospital to Flynn].

24 4]. Other than noted in paragraph 3] above, no other information is presented by the Campbell Plan pertaining to Cincinnati General Hospital or University of Kentucky Medical Center. [No plan provision].

24 5]. Ohio applies the policy that it will not administer potassium iodide to the general public, including children. This position taken by the State of Ohio and its political subdivision of Clermont County, removes any consideration of a reasonable assurance being presented by state and county plans and the failure to implement any procedure for the prompt administration of potassium iodide to block radioactive iodine intake to the thyroid gland, presents a substantial departure from required protective action to safeguard the health and safety of the exposed population. [Ohio

Plan §III, Letters of Agreement, letter 14; Clermont Plan, §III-B, Emergency Response Support, p. II-B-1 (no plan provision)].

24 6]. The life squads present in Clermont County, Ohio have no training for the examination and determination of persons contaminated and to take required safeguards to exclude such individuals from noncontaminated members of the public; and the members of the respective life squads in the plume area of Clermont have no training or qualifications in rendering aid to individuals contaminated and individuals sustaining radiological injury. The members of the plume area life squads in Clermont County may or may not respond as emergency resource personnel based upon priority commitments to one's vocation and the need to assist one's family during the evacuation process. The Clermont Plan in its implementation of providing volunteer life squads to assist and render aid to radiological injured and contaminated individuals provides no reasonable assurance that such volunteer will in fact volunteer one's services during an emergency. [No plan provision.]

24 7]. The monitoring of evacuees by local police and fire personnel at relocation centers within 12 hours of the evacuees arrival is inadequate to screen, separate and isolate contaminated individuals, providing exposure by the contaminated person to the population at the relocation center. There are no provisions set forth and no implementation of training to police and fire personnel to properly monitor evacuees at relocation centers, to screen evacuees and isolate those contaminated or to decontaminate such individuals or the facilities for decontamination. There is no provision for monitoring of persons present at relocation centers before such persons exit the premises. [Clermont Plan, §II-I, Protective Response, p. II-I-4; otherwise no plan provision.]

24 8]. Campbell County provides no plan or its implementation for the timely administration of potassium iodide as to the manner, place, administration and timely presentation of such blocking agent to the general public, and as such there is no reasonable assurance that the blocking agent can be systematically and timely administered to the public. [Campbell Plan, Basic Plan, p. V-2.; otherwise no plan provision.]

36 F]. Although the plans acknowledge that it is important that potassium iodide (KI) be administered as early as possible after a radioactive release and that it loses effectiveness quickly over a short period of time, there are no plans for the storage or distribution in Mentor or in the immediate vicinity of Mentor or within the 10-mile EPZ of KI for use by the general public. [Campbell County plan: Annex F, IV-A-3, p. F-4, IV-F, p. F-7; Appendix F-11.]

24 9]. Campbell County does not provide for any monitoring of plume exposed persons, except that persons transported by school buses who do not wish to go to a reception center will be decontaminated at Northern

Kentucky University. The absence of any reasonable assurance that contaminated persons will be monitored and decontaminated, as necessary, fails to provide reasonable assurance that monitoring of persons and decontamination procedures will be implemented. [Campbell Plan, Annex F, Protective Actions, p. F-9-1.]

24 10]. The procedures in Clermont and Campbell Counties to acquire lists of disabled, handicapped and senior citizens requiring special transportation fails to provide reasonable assurance by the plan or in its implementation that all such individuals are identified and that adequate vehicles and personnel are available and dependable to enter the plume exposed area to evacuate such individuals. [Clermont Plan §II-B Emergency Response Support, p. II-B-1; §II-I, Protective Response, p. II-I-5; Campbell Plan, Annex F, Protective Actions, p. F-9-1.]

25. The monitoring devices selected and their placement offsite for the monitoring of releases, anticipated and accidental, of radioactive materials, including plume exposure in the event of accident, as to the location are inadequate to protect the health and safety of the population of Clermont County, Ohio, and as the same applies to the monitoring of releases into the Ohio River, and other sources of water for human consumption, as the same affects drinking water, plant and animal life of that waterway and area within the plume exposure which are subsequently consumed by the population of the county; and the inability of such monitoring to adequately and timely inform the applicant and local and state agencies and related dissemination of such information to and for the protection of the public's health and safety.

Specifically.

25 1]. Denied.

25 2]. Denied.

(Note: 25 3] and 4] are admitted only to the extent that they raise matters within the purview of 10 CFR §50.47(b)(9).)

25 3]. The Clermont County Board of Health and the Clermont County Cooperative Extension Service are jointly responsible for the monitoring and evaluation of the impact of radiation release upon county farm products and livestock and based upon such monitoring and assessment will institute protective actions pertaining to milk and livestock feed control. The plan provides no procedure and no procedure can be implemented with reasonable assurance for the protection of the public that livestock and dairy cattle within the monitoring range can be provided stored, closed feed, removed from pasturing, that facilities exist at the respective farm to remove livestock from field and house them and to store in sufficient quantity feed in closed containers, and to monitor that such protective

agricultural practices are followed at the farm level. [Clermont Plan, §II-A, County Agencies (Gen), pp. III-A-3 and 10; otherwise no plan provision.]

25 4]. There is no provision for the monitoring of milk produced in the EPZs and transported in bulk to a processing and bottling facility for distribution to retail groceries and subsequent human consumption. [No plan provision.]

- 26. Denied.
- 27. Denied.
- 28. Denied.
- 29. Withdrawn.
- 30. Denied.
- 31. Denied.
- 32. Denied.
- 33. Denied.

34. The proposed Kentucky and Campbell County radiological response plans invalidate themselves as responses to the requirements for plans in 10 CFR §50.33(g), 10 CFR §50.47(a), (b), 10 CFR Part 50, Appendix E, and NUREG-0654 because they repudiate their own use during an emergency. The Campbell County plan (p. V, Plan Organization) contains the following statement: "During an emergency, Standard Operating Procedures (SOPs), developed from the plan, will be employed to respond to the emergency rather than this planning document". This statement is essentially repeated in the Campbell County Basic Plan, Appendix 8, p. VII-8-1, and twice in the Kentucky plan: Plan Organization p. VI and Basic Plan, Appendix 5, p. 5. SOPs are not included in the plans and have not been submitted separately.

Since the plans disavow themselves and establish SOPs as the *sine quo non* of emergency planning during an emergency, and since no SOPs are contained in the proposed plans or have been otherwise submitted, the people of Mentor of Campbell County, and of Kentucky have no plan to protect their health, safety, and interests during a radiological emergency at the Zimmer plant. As they stand, the so-called plans are, by self-description and by objective inspection, simply statements of intentions or, at best, plans for plans. To consider them in any other light would deny Mentor its right to make a timely evaluation of plans that would actually be used during an emergency, those that, if they exist, are hidden in the undisclosed SOPs.

35. Although the 50-mile ingestion pathway for the Zimmer Station EPZ includes about 700 square miles of southeast Indiana there are no radiological emergency plans by or on behalf of the State of Indiana or the affected local Indiana governments. This omission endangers the health,

safety, and interests, not only of the people of Indiana, but also of the people of Mentor, Campbell County, Kentucky, and Ohio, and is in violation of 10 CFR Part 50, Appendix E, 10 CFR §50.33(g), 10 CFR §50.47, NUREG-0654/FEMA-REP-1, II-J-11, p. 79 (and all other criteria for state plans which are related to ingestion pathway planning).

The people of Mentor, of Campbell County, and of Kentucky (and of Indiana and Ohio) do not live in a vacuum; political boundaries are of no significance here. Parts of Kentucky (including Mentor), Indiana and Ohio form a tri-state area within which there is production, distribution and consumption of milk and other foodstuffs with little or no regard to point of origin. The people of Mentor buy their food in this tri-state market and must not be exposed to the hazards of contaminated food from the unprotected Indiana part of the 50-mile EPZ. Simple humanitarianism extends this concern to all people who might be similarly exposed.

36 A]. Denied.

36 B]. Consolidated with 20 c 10].

36 C]. Consolidated with 20 c 7].

36 D]. Consolidated with 20 c 8].

36 E]. Consolidated with 21].

36 F]. Consolidated with 24 8].

36 G]. Consolidated with 20 c 9].

36 H]. Consolidated with 20 e 7].

36 I]. The proposed system for prompt notification of the public (Campbell County plan: Annex C, I-A-1, p. C-1, IV-C, p. C-3, Appendix C-5) is inadequate and a burden to the people in that the siren system is designed to warn only 40% of the people within the 10-mile EPZ and has not been tested to ensure that it will achieve that design objective in any or all weather conditions for people outside or inside their homes during all their various activities; the radio system will not serve people who are outside their homes, farmers in the field, or people in their automobiles and the integrated siren and radio system is not adequate to protect those with hearing or sight impairments or those who operate or are near loud or noisy equipment and, being dependent upon electricity, will not function during periods of electric power outage.

36 J]. Denied.

36 K]. Provisions for the monitoring, control and regulation of public water supplies, or for the availability of uncontaminated water to the public, before and during a radiological emergency (Campbell County plan: Annex D, Appendix D-3; Annex F, G, p. F-8, pp. F-11, F-12, and F-13, Appendix F-12, IV p. F-12-1; Annex H, IV-B, p. H-2; Annex P, Appendix F) are not adequate to protect the health and safety of the people of Mentor or for a large population within the 10 and 50-mile

EPZs in Kentucky because there is no radio communications system between the Zimmer plant or state or local response agencies and the water treatment and supply facilities; the water treatment and supply facilities do not have the equipment or trained personnel for continuous monitoring of water before and during a radiological emergency; the present plans are too undeveloped and too clumsy and time-consuming to ensure that prompt and appropriate protective action can be taken; and, further, the people of the City of Mentor and a large population within the 10 and 50-mile EPZs, who receive their water from treatment and supply facilities that are situated near and are not unlike those of the City of Cincinnati, have not received consideration and potential protection similar or equal to that given the people of Cincinnati as evidenced by the recent settlement between the applicant and Cincinnati in a matter of radiological protection.

36 L]. Denied.

36 M]. Denied.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Sheldon J. Wolfe, Chairman
Dr. George A. Ferguson
Dr. David R. Schlink

In the Matter of

Docket No. STN 50-437 ML

OFFSHORE POWER SYSTEMS
(Manufacturing License for
Floating Nuclear Power
Plants)

June 30, 1982

The Licensing Board's Initial Decision authorizes the Director of Nuclear Reactor Regulation to issue a manufacturing license, subject to a condition, to Offshore Power Systems for the manufacturing by the end of 1999 of eight standardized floating nuclear plants at its manufacturing facility located on Blount Island, in Jacksonville, Florida.

ADJUDICATORY BOARDS: STANDARD OF REVIEW

The Board did not conduct a complete *de novo* independent review of uncontested health and safety, and environmental matters. With respect to its Findings of Fact on uncontested matters, as authorized by the Rules of Practice and pursuant to decisions of the Appeal Board, the Licensing Board relied upon the testimony of the Applicant and the Staff, and the conclusion of the Advisory Committee on Reactor Safeguards, and it decided that the Staff's review had been adequate to support such findings. 10 CFR Part 2, Appendix A, V(f)(1); *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-123, 6 AEC 331, 335 (1973); *Gulf States Utilities Co.* (River Bend Station, Units 1 and 2), ALAB-444, 6 NRC 760, 774 n. 26, 1977).

TECHNICAL ISSUES DISCUSSED:

Transmission lines; corrosion; protection during transportation of radioactive material; aircraft crash risk; probability of postulated LNG tanker accident which could affect the plant; turbine missiles; marine entrainment and impingement; effects of thermal discharge; discharge structure; dredging program; impact of plant upon tourism; abnormal occurrences; low level radiation releases; fire protection measures; consideration of generic safety questions in safety evaluation report; financial qualifications; technical qualifications.

APPEARANCES

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**INITIAL DECISION
(Manufacturing License)**

OPINION

I. INTRODUCTION

The Board's Findings of Fact and Conclusions of Law are appended and are incorporated herein by reference. An Order is also appended.

In Part III of this Opinion, we discuss and resolve the issues controverted by the Intervenors. A Board question is also addressed in that Part. Our underlying factual finding with respect to these controverted issues and to the Board question are set forth in Section IV of the appended Findings of Fact.

We have not conducted a complete *de novo* independent review of uncontested health and safety, and environmental matters in this case. Rather, in Sections I, II and III of our Findings of Fact which set forth our findings on uncontested matters, as authorized by our Rules of Practice and pursuant to decisions of the Appeal Board, we have relied upon the testimony of the Applicant and the Staff, and the conclusion of the Advisory Committee on Reactor Safeguards, and have decided that the Staff's review has been adequate to support such findings.¹ Thus, other than advertng to certain findings upon uncontested matters in Part II Background, the Opinion does not discuss such uncontested matters. Our Conclusions of Law encompass both contested and uncontested matters, as well as the Board's question.

Finally, it should be noted that all of the submitted proposed findings of fact and conclusions of law which are not incorporated directly or inferentially in this Initial Decision are rejected as being unsupported in law or fact or as unnecessary to the rendering of this Initial Decision.

II. BACKGROUND

Pursuant to Appendix M of 10 CFR Part 50, Offshore Power Systems (OPS or Applicant), a division of the Water Reactor Divisions of Westinghouse Electric Corporation, has applied for a license authorizing the manufacture of eight standardized floating nuclear plants (FNPs) at its

¹ 10 CFR Part 2, Appendix A, V(D)(1); *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-123, 6 AEC 331, 335 (1973); *Gulf States Utilities Co.* (River Bend Station, Units 1 and 2), ALAB-444, 6 NRC 760, 774 n.26 (1977).

manufacturing facility located on Blount Island in Jacksonville, Florida (Fdgs. 1, 2). Each FNP will be a totally integrated power station mounted on a rectangular floating platform measuring 400 by 378 feet (Fdg. 10). The nuclear steam supply system for each plant will consist of a Westinghouse pressurized water reactor having a proposed initial power of 3411 MWt, 1150 MWe (Fdg. 18).

As required by Appendix M, Applicant has submitted an envelope of site parameters and evidence to show that the proposed plants can be located and operated at sites which fall within the envelope of site parameters without undue risk to the public health and safety. Said Appendix requires that, after the granting of a manufacturing license, a detailed review be made of each individual site during construction permit proceedings to ascertain that the proposed site does fall within the site envelope parameters. There is reasonable assurance that a number of sites along the East and Gulf Coasts meet the FNP site envelope parameters (Fdg. 22).

After reviewing and evaluating the OPS's Application, Plant Design Report (PDR), and Environmental Report (ER), which were amended or supplemented, the Staff prepared a Safety Evaluation Report (SER), as supplemented, and a multipart Final Environmental Statement (FES) (Fdgs. 5, 6).

Subsequently, several parties were admitted as intervenors, and the State of New Jersey was granted leave to participate as an interested state. Numerous contentions were admitted as issues in controversy, but, after the record was closed, only Applicant and the Staff filed proposed findings of fact and conclusions of law (Fdgs. 8, 9).

III. CONTENTIONS AND A BOARD QUESTION

A. Emergency Power (Fdgs. 52-61)

In the event of an emergency at the offshore plant, power would be drawn from shore. An Intervenor contended that the performance of high-voltage submarine electric cables is not sufficiently well-known and that these cables could not be considered a reliable source of emergency power. Transmission circuits connecting the plant to the shore are not a part of the plant design, but will be designed as appropriate for each site. Cables suitable to the case do exist, but if underwater cables are used, they must be protected against mechanical damage, for example by ships' anchors. Adequate means exist for detecting and locating cable damage. However, because repairs to underwater cables are sometimes slow and costly, a spare transmission circuit would probably be required.

Flexible connections are required between transmission cables and the floating plant. These connections are not part of the plant design, but rather would be site specific. Further testing is necessary before a final design connection can be adopted, but no significant design problems are expected.

Adequate on-site emergency power would be available from diesel generators in the plant.

The Board concludes that sufficient experience and data exist relevant to the installation and use of underwater high voltage electrical cables to permit their safe operation. These cables can provide reliability equivalent to overhead transmission lines. The Board also concludes that an off-site emergency power system utilizing high-voltage underwater cable can be designed to meet the requirements of both General Design Criterion 17 and, to the extent applicable, General Design Criterion 18.

B. Underwater Electrical Transmission Lines (Fdgs. 62-63)

It is contended that the use of high-voltage underwater transmission lines could endanger swimmers and boaters and that inadequate attention has been given to these hazards. If an underwater cable were to develop a leak, pressurized oil would flow out, but this oil is relatively harmless. The loss of pressure would lead to prompt deactivation of the circuit. Excessive electrical leakage through a flaw in the insulation is unlikely to occur and even more unlikely to harm someone nearby. No examples were known where ships, boats or swimmers had been harmed by submarine cables. The Board concludes that adequate consideration has been given to possible hazards that could be caused by defects in underwater cable, and that the probability of harm to the public from such defects is very small.

C. Marine Environment (Fdgs. 64-84)

Once moored at its operating site a floating nuclear reactor becomes difficult or impractical to move. Therefore it must be maintained for its operating life (40 years expected) without visits to shipyards, drydocking, or similar maintenance activities that are routine for conventional ships. Intervenors contend that the effects of the marine environment have not been adequately considered in the floating plant design, that corrosion will degrade the performance of essential safety systems, and that the interactions of radioactivity with the salt water environment may introduce particularly harmful effects.

The marine environment poses a number of special problems for this type of power plant. A FNP must be towed to the operating location; it responds to water motions in the basin; the potential for corrosion is much

greater, not only at the hull but also in the plant interior where the salt particles that abound in marine air might deposit and destroy various types of equipment.

The plant is designed to operate during accelerations and angular motions. The limits of such motions have been defined in the site envelope data. Usually conditions in the open ocean would fall outside these limits; therefore site protection (e.g., a breakwater) will be necessary. Within the design limits, the response of the plant equipment has been evaluated, using methods similar to the analysis for seismic effects. However, in this case the motions are encountered with regularity so that fatigue factors also must be considered. This has been done by Applicant and by Staff. Several types of components were analyzed for motions beyond the design limits; the loads resulting from these motions were still less than loads generated by seismic accelerations which the plant must withstand.

Corrosion control of the plant exterior surfaces will require a continuing maintenance program. The Applicant has prepared a report "FNP Platform Hull Drydocking Equivalency" which describes this program. The upper parts of the plant, exposed to air, rain, spray, and sea salt, are protected by conventional marine coatings. Experience with such coatings is abundant; methods for repair or replacement are well known. Corrosion will most severely challenge the area of contact between air and sea - the splash zone. Newer marine coatings (epoxy) will be applied here. From time to time mechanical abrasion or coating failure will require some repair, estimated at less than 5% annually of the surface area. To do this, the splash zone can be raised above the still-water level by trimming the plant up to 1%; or cofferdams can be built to exclude the water from a selected region of the splash zone.

The immersed hull will be protected by conventional marine coatings and by a cathodic protection system provided by the owner. Such systems have proven effective with the U. S. Naval Reserve Fleet for more than 20 years. Steel plate thickness of the FNP hull design has been increased beyond the thickness necessary for strength. The added thickness is equivalent to the normal corrosion rate of unprotected steel over a 40 year period. This "normal" rate does not include the effects of pitting, but Applicant maintains that pitting in carbon steel slows after some years to a minor fraction of the "normal" rate and that pitting around welds can be controlled by appropriate methods. If necessary, the underwater hull can be repaired using existing techniques for underwater welding.

Biological fouling of the hull will occur. This may induce localized corrosion and will surely inhibit the periodic (at least every 4 years) hull inspections by the Coast Guard. Defouling will be required for these inspections.

The plant interior, except for the fuel building, is protected from the marine environment by the ventilation system. The fuel building is kept below atmospheric pressure to avoid any leakage of radioactivity; safety equipment in this building will be qualified for operation in the marine atmosphere. Elsewhere in the plant, safety equipment must be protected from airborne salt and high humidity. All spaces except the fuel building are kept at pressures slightly greater than outside, so marine air cannot leak in. Fresh air passes through high efficiency filters and is dried to relative humidity of 80% or lower. Any salt particles present in the air under these conditions would be less than one micron in size and would be dry. Such particles do not settle out and are not corrosive. Short term failures of the air treatment system would have no significant effect. The air treatment system will include suitable instruments to indicate that it is performing. In addition, the plant operator will be required to monitor cumulative salt deposition, to insure that there are no long-term buildups.

While the plant is being towed to the operating site, important safety equipment will be protected by the ventilation system driven by power from the emergency diesel generators. During this period, the cathodic protection system will not be operating, but hull corrosion during this limited time should be minor.

The Board finds that the Applicant has given adequate consideration to the effects of corrosion in a salt water environment. The design of the FNP provides adequate protection against such effects. Required in-service surveillance will provide appropriate monitoring to detect corrosion and other saltwater effects. Therefore, plant operation within the marine environment will not pose undue risk to public health and safety.

No evidence was presented to support the suggestion of synergistic effects between radiation and seawater. Of the various nuclear effects, only exposure to neutrons has been shown to alter the mechanical properties of metals. Significant neutron fluxes occur only within the reactor vessel, but no seawater approaches this area. Systems handling water from the plant basin are selected and assembled in a manner designed to withstand the corrosive effects of seawater.

The Board concludes that the Applicant has given adequate consideration to the combined effects of saltwater and radioactivity on the mechanical properties of materials. The combined presence of either saltwater or salt air and radiation will not occur in any manner likely to affect the mechanical properties of materials in the FNP.

D. Control Room (Fdgs. 85-90)

An Intervenor contended that the design and location of the control room were inadequate to protect the plant from loss of control as a result

of severe storms, accidents, or sabotage. The control room is located high enough on the plant that it would still be above water if the platform were to sink to the bottom of the basin. Thick walls protect it against a variety of challenges (See E. Transportation, *infra*). The control room is designed to withstand the most severe meteorological conditions, earthquakes, the most probable types of aircraft and ship collisions, and floating fires. A comprehensive security program will be required to protect against sabotage, but the design protects this area against other external threats.

The Board concludes that the design and location of the central control room is adequate to withstand hazards due to meteorological conditions, fires, industrial sabotage, flying missiles or collisions.

E. Transportation (Fdgs. 91-100)

Three Intervenors' contentions related to transportation problems between the FNP and land. All were concerned with the transfer or transport of radioactive materials; in addition, one contended that damage might occur to the FNP platform, mooring system, buildings or breakwater as a result of transportation operations. The plant owner will be responsible for these operations, and details must necessarily be site specific. However, a variety of accidents, representing the worst possible plausible events, have been considered. The consequences fall within established limits except for those accidents with very small probability of occurring.

Spent fuel transportation represents the greatest hazard. Spent fuel casks that meet NRC requirements would not rupture in any of the postulated cask-drop accidents, except where one sinks in the ocean depths (over 2000 feet). Even if cask rupture should occur the radiological consequences would fall within the appropriate limits.

The most serious considerations relate to service ship accidents. Service ships within the FNP basin must be limited in size and speed. Explosion of fuel-air mixtures in service vessels must be prevented or limited by appropriate measures given below (See I. Ship Collision, *infra*).

Within those constraints, operations involving transportation between plant and shore are not likely to cause serious damage to the FNP or breakwater. The plant is designed to withstand substantial impacts from tornado-borne missiles, and is equipped with systems to deal with external fires. Advance weather information will be available to reduce the likelihood of surprise by severe storms, thus allowing transportation operations to be delayed until weather conditions are favorable.

The Board concludes that the Floating Nuclear Plant has been designed so that spent fuel can be safely transferred to a barge (or other form of transportation) alongside the plant. Analyses of fuel cask drop accidents show that the cask would not rupture, but even if it should rupture, the

resulting calculated radiological consequences are well below the guidelines set forth in 10 CFR Part 100. Accidents in the transportation of spent nuclear fuel radioactive waste which could release radioactive materials from the cask or package and thereby produce radiological consequences have been adequately considered. The FNP has been designed to withstand collisions, fires or flying debris that might result from accidents or the sudden arrival of unexpected bad weather while nuclear fuel is being handled or transported.

The Board concludes that adequate consideration has been given to the prevention of accidents in the handling and transportation of radioactive materials to and from the FNP, and adequate consideration also has been given to accidents which could occur during such transportation.

F. Site Envelope Parameters (Fdgs. 101-124)

In order to qualify for a manufacturing license, Applicant must supply an envelope of postulated site parameters, *i.e.*, a set of site specifications that encompass the acceptable range of site characteristics. One Intervenor contended that these parameters relating to climate, weather, tides and other natural conditions were not well chosen or justified.

The plant has limited capability to withstand tilting and accelerations, and therefore must be protected from the open-sea by a breakwater or some other shelter. Within this basin the plant must not hit bottom during lowest water conditions or extreme tilts. On the other hand, water under the FNP platform must be shallow enough so that vital areas would not flood if the plant sank to the bottom, even under the worst probable high water conditions.

To identify these conditions, the 100 Year Storm and the Maximum Probable Hurricane were defined and considered in conjunction with high and low tide conditions. The extremes of weather were not combined with the most extreme high or low tide conditions because the combination of low probability events seemed sufficiently unlikely. The effect of tsunami, and seiches on water level was also considered.

The plant is much less likely to be hit by a tornado than by a hurricane, but site characteristics and plant design must enable the FNP to withstand such an encounter. Tornadoes are principally a terrestrial phenomena, but sometimes pass out to sea where they soon degenerate. Few direct observations exist on marine tornadoes, so the characteristics of terrestrial tornadoes have been adopted in designing the plant. Since a plant is not likely to be located more than a few miles from land; this extrapolation seems quite reasonable.

Waterspouts occur frequently over the ocean. Waterspouts resemble tornadoes in many ways but they have substantially less wind force and pressure drop. A plant that can withstand a tornado can withstand a waterspout.

For a selected site the owner will be required to analyze plant motions that might result from these various storms, or from events such as tsunami or seiche. Seiche is a standing wave in a basin. Susceptibility of a site to seiche is highly specific to the basin chosen and each location must be evaluated accordingly. Tsunami are not common along the Atlantic or Gulf Coast, but each selected site must be evaluated with respect to probability and magnitude.

Although floating reactors are not in direct contact with the sea floor, they are not immune to earthquakes. Water effectively transmits much of the seismic acceleration. The plant is designed to withstand only a certain level of acceleration; thus, the site must be selected so that greater seismic effects are very unlikely. Owners will be required to show that the location, the site design and the mooring design meet these requirements.

Maximum rainfall rates must not exceed a specified level lest the load carrying capacity of roof surfaces be exceeded. The acceptable maximum of 33 cm (13 in.) per hour is greater than anything likely to occur along the Atlantic and Gulf Coasts.

The range of acceptable water temperatures is set at the upper end (35°C) by the requirement for cooling and at the lower end by the freezing of sea water (about -1.9°C). Air temperatures at 0-5 meters above the water must not be lower than -26°C.

The Board concludes that the site envelope parameters specified in PDR Table 2.1-1 and in SER, Supplement 4, Table 2.1 (Revised), account for adverse environmental conditions that could reasonably be expected to affect an FNP and that the Applicant has properly selected and justified the site parameters set forth in those tables. Numerous sites along the Atlantic and Gulf Coasts appear capable of meeting the selected site envelope parameters.

G. Radiological Impact on Swimmers and Boaters (Fdgs. 125-133)

Swimming and boating activities may focus in the vicinity of a FNP. An Intervenor contended that inadequate attention has been given to radiological effects on such persons. Calculations of radioactivities normally discharged from the plant show these meet the maximum permissible concentration limits for all isotopes. Even under poor dispersion conditions a boater stationed continuously at 200 meters (about the outer limits of the breakwater) would receive less radiation from the atmosphere

than permissible limits. Doses from radioactivity in the water would be much lower - a small fraction of the exposure from natural background.

Doses resulting from a series of postulated accidents were somewhat greater. For design basis accidents during conditions of poor dispersion at typical sites, dose guidelines for the exclusion distance were met at a distance of 500 meters, and for the low population boundary at a distance of 1200 meters.

In the unlikely event of more severe accidents, involving even the release of core melt debris, direct exposure of swimmers to radioactivity in the water would be relatively small with the maximum exposed individual receiving 1 rem (full body). Radioactive exposures at the shoreline due to waterborne radioactivity from a core-melt accident were calculated to be very large (up to 230 rem) but unrealistic assumptions were used. We consider the dangers of shoreline exposure to be reasonably low. The danger of direct exposure to radiation will be reduced by the core ladle that is designed to delay melt-through in the event of a degraded core accident (See Fdg. 50).

The probability of airborne release during an accident beyond design basis is about the same from a FNP as from a land based plant, and the probable magnitudes of releases are also similar. Thus, swimmers and boaters would be exposed in a manner comparable to persons in the vicinity of a land based plant.

The Board concludes that the floating nuclear plant is designed to be in compliance with applicable parts of 10 CFR Part 20, the Annex to Appendix I of 10 CFR Part 50, and 10 CFR Part 100. Calculated doses and radiological impact on swimmers and boaters from normal operations or design basis accidents are not significant compared to natural background radiation. Exposures resulting from accidents beyond design basis will be comparable to those from a parallel accident at a land based plant. The Board concludes that adequate consideration has been given to the radiological impact on humans who may swim or boat in the vicinity of the FNP.

H. Aircraft (Fdgs. 134-139)

Intervenors contended that the risk from aircraft has been underestimated: by neglecting general aviation and military flights; by ignoring the continued growth of air traffic along the Atlantic Coast; and by inadequate attention to a deliberate collision as an act of sabotage.

The FNP is designed to withstand impacts from small aircraft, but some larger crashes would exceed design strengths and could endanger the public. Therefore the plants must be located where the risk of such crashes

is negligible. NRC rules do not require that deliberate crashes be included in the risk calculation.

Methods for assessing crash probabilities have already been established. Crashes are most probable in close proximity to airports; nuclear plants should not be placed there. Crash frequency also depends on proximity to airways, general level and type of traffic, general probability of crashes, and size of the target. Using appropriate factors and a selected group of typical plant sites, Applicant has shown that the probability of any large aircraft crashing into the plant is acceptably small.

The Board concludes that sites exist where the guidelines of 10 CFR Part 100 can be met.

I. Ship Collision (Fdgs. 140-149)

Intervenors contend that the dangers from ship collisions are underestimated and that dangers resulting from changes in shipping over the next 40 years cannot be adequately foreseen. Certainly a floating nuclear plant must be protected against collision from large ships. The breakwater or other protective barrier will provide most of the physical protection needed. The largest ships have deep drafts and will tend to avoid the relatively shallow regions where a FNP is likely to be sited. Still several types of accidents could cause unacceptable damage. The plant must be designed to prevent these, or be located so as to reduce their probability to an acceptable level.

The plant must be located where accidents involving a munitions ship or a liquefied natural gas (LNG) carrier are extremely unlikely. Based on present traffic patterns such sites exist. Future patterns are harder to predict, but reasonable estimates suggest that low risk sites can be found. LNG carriers travel between only a limited number of ports. The locations of handling facilities in the United States are known, and would be taken into account when siting a FNP. Barge traffic in LNG is scarce and does not appear likely to increase greatly. Munitions traffic is limited and tends to follow established patterns.

Explosions may also occur in vapor-air mixtures sometimes found in empty fuel tanks; or a chemical carrier might release toxic vapors near the plant. The site must be selected so that the probability of such events is very low.

Collisions at, or inside, the plant basin represent the greatest danger. Such accidents would most probably involve a service ship. Therefore vessels entering the basin must be restricted in size and speed. Empty fuel tanks must be small or kept well away from the plant, or inerted. Should fire break out nearby, the plant is designed to withstand it. The external

fire system can extinguish liquid-fuel fires within 100 feet and can cool external surfaces against heat from more distant fires.

The Board concludes that the probability of ship collision has been properly considered, as have the potential changes in shipping over the lifetime of the plant. Possible marine accidents, including collision with the plant, have been adequately considered. The combination of FNP design features and site envelope requirements provides reasonable assurance that shipping accidents will not present undue hazards to the public when the plant is properly sited.

J. Ice Containment (Fdgs. 150-156)

The contention asserts that the ice containment structure is innovative and thus should not be permitted unless there is adequate pre-licensing testing of the effects of roll, pitch and yaw. Ice condenser containments have been installed in several land-based plants and thus are not innovative. The balance of the contention has been mooted because the Applicant has committed to compare the land-based plant motions to the anticipated floating nuclear plant motions when they are precisely defined at the final design stage and, if the effects of motions in the floating nuclear plant should for some reason be more severe than expected, Applicant has committed to conduct additional tests to prove the adequacy of the design. If, at that stage, ice loading procedures, equipment, and/or the structural response of the ice condenser components need to be modified, the Staff advises that such changes are feasible. We see no reason why this testing should be completed before licensing.

K. Turbine Generator Matters (Fdgs. 157-190)

Several questions were raised regarding the safety of the turbine generator proposed for the FNP. Generally, these questions pertain to the design and testing of the turbine rotor particularly with respect to the behavior of a barge-mounted unit, to the adequacy of valves, and to the possible generation of destructive missiles.

The designer and supplier of the turbine generator has many years of experience in the manufacture and testing of units similar to those proposed for the FNP. Detailed analyses have been carried out to verify that the turbine rotor will perform satisfactorily without undue stress while operated on a floating platform. Overspeed protective systems will be installed and periodically tested to insure safe operation.

Valve design features have been included to prevent malfunction due either to acceleration or clogging. In-service testing and inspection will be performed to minimize plant shutdowns due to inoperative valves.

The probability of a turbine generated missile striking an essential safety-related system has been shown to meet applicable regulations. While it is not expected that missiles will be generated, adequate barriers intervene between the turbine and safety-related equipment to prevent damage to this equipment.

The Board concludes that the design of the FNP turbine generator is appropriate to the intended application and that alleged shortcomings and defects have not been established as serious threats to the safe operation of the plant. Applicant has committed to a testing program at the turbine manufacturing site, at the plant manufacturing site and at the plant location. Any defects revealed in this testing program must be corrected. Plant operators will be required to conduct a turbine inspection program to preclude a repeat of the Shippingport turbine failure.

L. Effect on Biota (Fdgs. 191-198)

A floating nuclear plant takes in surrounding water for cooling and releases it in a thermal plume. It also releases some radioactivity into the water. An Intervenor contended that the effects on biota have not been adequately considered. These effects arise from impingement on screens or entrainment as the cooling water enters the plant, from thermal effects as the biota encounter the warmer effluent sluice, or from direct radiation by the radioactive discharges.

The water velocity at the intake screen will be 0.3 meters/sec (0.6 knots). Most fish can swim faster and could escape if they were alert to the danger. Plankton cannot escape and are assumed to suffer 100% mortality if entrained. Some planktonic species drifting past the plant might suffer significant losses but reasonable assumptions suggest 0-2% loss of the population in the area. In some cases, such a loss of planktonic fish larvae could have an effect on the species population.

That area of the thermal plume warm enough to cause mortality will be about the same size as the FNP hull. Swimming organisms can avoid this zone. Lesser effects may occur over a greater area, but the overall area affected is still small and not likely to harm the community structure. No changes should be perceptible at the shore. A cut-off of the thermal plume would not have a great effect on the marine biota. Normal radioactive discharges to the water will produce radiation levels far below any shown to be harmful to marine biota. In the unlikely event of a core melt accident, the worst-case chain of events could kill biota in the immediate vicinity of the plant through direct radiation exposure, but these kills would extend over only a small area and would have no lasting effect on the ecosystem.

The Board concludes that adequate attention has been given to the adverse effects on aquatic biota. The actual extent of these effects must be carefully considered on the basis of the site selected with particular attention paid to fish larvae. Sites probably exist where the adverse impact of the plant would be acceptable.

M. Discharge Outfall (Fdgs. 199-203)

Intervenors contended that the discharge outfall design has not been adequately considered. Actual design of the outfall will be done by the plant owner in the light of specific site features. Generic evaluation of discharge outfalls indicates that suitable designs are possible, and a wide variety appears to be available.

The Board concludes that adequate consideration has been given to the functional design of the discharge outfall. Details of the design will be site specific and the responsibility of the plant owner, but several designs appear adequate for either off-shore or onshore sites.

N. Food Chain (Fdgs. 204-221)

An Intervenor contended that inadequate attention had been paid to the cumulative effects of radioactive materials in the food chain from plankton through humans. These effects were considered extensively by both Applicant and Staff for both normal operating levels of radioactive releases and during accidents including core-melt and release.

These studies clearly indicated that releases during normal operation or as a result of design-basis accidents present no hazard to the public.

Very improbable accidents beyond design-basis are more difficult to assess and could represent a serious threat. It is difficult to predict how much of the core might melt through into the environment, how much of the activity might be in the sump waters and how much of that might escape. Substantial uncertainties are attached to the assignment of core melt debris particle sizes after the material penetrates the bottom of the barge and enters the water. Substantial uncertainties also exist as to the rates at which these materials would leach from the debris into surrounding waters, the extent to which they would be retained by nearby sediments, and the rate at which they would equilibrate with the various organisms that make up a fish's diet.

Generally, very pessimistic assumptions were applied and the resulting upper-bound exposures were rather alarming. For example, the maximum exposed individual for an offshore reactor accident was calculated to receive over 500 rem - probably a lethal dose. But this individual caught his entire supply of fish to eat for a year at one time in the worst part of

the radioactive plume - a most unlikely act following such an accident. Probably a major accident would cause no prompt fatalities through the food chain. In the absence of any efforts to interdict, the upper-bound exposures to the population through the liquid pathway were also alarmingly high, and would substantially exceed liquid pathway exposures from a similar accident at a land-based plant; they could match airborne pathway exposures.

Interdiction efforts could be more easily applied to liquid pathway exposures at the land-based site. Oceanic dispersion processes can spread radioactivity much further and faster, unless effective source interdiction were to be accomplished by measures such as sinking the plant on the core debris or covering the debris with clay or other material that would tend to retain the radioactivity. In rivers or estuaries, the dispersion would not be as broad, but interdiction will still be much more difficult than at a land-based plant. In any case, vigorous efforts to mitigate the effects of the accident could be very effective.

Analysis of costs versus benefits indicate that floating plants compare favorably with some land-based plants. Such analyses when applied to a new concept are subject to considerable uncertainty and are quite susceptible to the degree of conservatism adopted. More accurate assessments can be made at the construction permit stage for specific sites using best estimates rather than highly conservative assumptions.

The Board concludes that adequate consideration has been given to the cumulative effects of radioactive materials in the food chain.

O. Dredging (Fdgs. 222-226)

A great deal of dredging must be done before the breakwater can be constructed, and the basin within the breakwater and the floor around the breakwater must be dredged periodically to maintain the site. The Intervenor claimed that the impact on the biota of dredging within and around the breakwater had not been adequately considered. Since the contention presupposed the existence of a breakwater, it was interpreted to include only the maintenance dredging.

Maintenance dredging will be much less damaging than construction dredging. Effects on plankton and fish will be local and temporary. Total loss of benthos within the breakwater has been included as an environmental cost in the cost-benefit analysis, but the area involved is relatively small so the cost is not great. Disposal of dredge spoils must be in accordance with applicable regulations.

The Board concludes that adequate consideration has been given to the impact on the aquatic biota that will be caused by maintenance dredging within the breakwater and near its perimeter.

P. Impact On Resort Economics (Fdgs. 227-237)

At issue was the contention that fears of a nuclear accident would have an adverse impact upon the economies of resorts proximate to floating nuclear plants. Both Applicant and the NRC Staff conducted investigations to evaluate the impact of nearby land-based nuclear generating plants upon the resort-oriented economies of various communities. Further, in updated testimony, the Staff analyzed the impact of the accident at Three Mile Island, Unit 2, upon nearby recreational fishing and tourism. In addition, the Staff specifically researched the question of potential tourist behavior in the vicinity of FNPs and computed the impact that a FNP would have on the local economies of four coastal resort areas. We have relied most heavily upon the Staff because of its in-depth studies and because, in two instances (See Fdgs. 230, 232), we were not persuaded by the Applicant's conclusions. We give no credence to a survey conducted by a witness for an Intervenor, the Board of Chosen Freeholders of Atlantic County, because of its conceded defects and limitations (See Fdg. 237).

We conclude that the economies of resort-oriented communities near land-based nuclear power plants, in the main, have not been adversely affected, and that the potential impact of an FNP upon a resort economy will be very small and well within the year to year fluctuations in the local economic activity.

Q. Net Energy Yield, Cost-Benefit Balance (Fdgs. 238-243)

An Intervenor contended that the cost-benefit analysis is flawed for several reasons. These include a failure to consider the possibility that fewer than eight plants might be built or that plants may not last long in the marine environment. Other alleged flaws include: a failure to consider decommissioning the breakwater; the cost of foreclosing alternate uses of the coastline; failure to consider possible requirements for closed-cycle cooling at inshore plants; and improper evaluation of changes in costs and benefits with time.

Intervenor presented no evidence in support of this contention and it appears to have little basis. One plant can, in its expected lifetime, produce fifteen times the energy (thermal) required to build the manufacturing facility, construct the plant, and fuel it. Energy balance becomes positive rather early in the plant's operating history. The effects of marine environment on the expected life of the plant have already been considered (C. Marine Environment, *supra*).

Any offshore breakwater built to shelter an FNP would probably be useful, per se, so that disassembly following removal of the plant seems unlikely. Costs of breakwater removal were estimated at \$400 million

(1978) compared to annual maintenance costs - navigational lighting, etc. - of \$0.5 million. There is a great likelihood that a wrong choice would be made if methods to be used in the future were selected now.

An offshore FNP requires less dedicated coastline than a land-based plant; in-shore FNPs require about the same as land-based plants. Economic cost of the usage of coastland would be less than 1% of the cost of the power station. Eight FNPs sited in pairs would foreclose usage of less than 0.1% of the Atlantic and Gulf coastline that remains undeveloped.

In calculating costs and benefits, appropriate adjustments were made for changing value of the dollar. Because this licensing action has been under review for so long, these evaluations were made quite a few years ago and are no longer accurate. Nevertheless they were appropriate for the time. We find no indication that benefits were based on inflated rates compared to costs. A more timely and more accurate cost-benefit analysis must depend on updated values and upon the site selected for the plant.

If an in-shore plant requires closed cycle cooling, the added costs of cooling towers would probably be less than the reduced cost of site preparation (breakwater, etc.). Environmental consequences of cooling towers for an FNP are essentially identical with those for land-based plants.

The Board concludes that the net energy yield from FNPs will be positive even if only one plant were built and operated. The impact of the marine environment on plant operating life has been adequately considered. Costs of decommissioning the breakwater have been considered. Costs associated with the use of cooling towers at in-shore sites have been adequately considered. Foreclosure of alternate uses of the shoreline and coastal areas will not alter the overall cost-benefit balance. Appropriate time frames were used in assessing the cost-benefit balance. Costs of floating nuclear plants were estimated using the escalation rates and interest rates appropriate at the time of the calculations. The Board takes official notice that rates have changed since these estimates were made, and that the price of electric power has also changed substantially. Such changes are likely to cause a considerable increase in any new calculation of costs and of benefits, but the analyses in this record were reasonable and appropriate at the time they were presented. The actual cost-benefit balance must depend on the site and the time of actual plant operation.

R. Special Energy Requirements (Fdgs. 244-245)

When Intervenor Brigantine withdrew as a party, the Board retained this contention which, in substance, alleged that the very large energy requirements associated with building a breakwater and towing two plants to it were not adequately considered in the cost-benefit analysis. When

these energy requirements were analyzed for a two-plant site they totalled about 0.3% of the expected lifetime energy output.

The Board concludes that the energy required to construct the break-water, to tow (two) plants and to connect them to the shore is insignificant compared to the expected energy production.

S. Heat Pumps and Secondary and Tertiary Recovery of Oil (Fdgs. 246-247)

The Board inquired whether the increasing use of heat pumps in homes or the improved methods of oil production might modify conclusions on the need for nuclear power. The growing use of heat pumps will probably increase electric demand, not reduce it. Savings would be in fossil fuels.

Domestic oil production is declining, and improved production techniques will only slow the decline. Future domestic oil supplies cannot meet projected needs for electricity.

The Board finds that conclusions reached in the FES Part II are not changed or modified by consideration of heat pumps and secondary and tertiary recovery of oil.

IV. CONCLUSION

In light of our Opinion, and in light of the Findings of Fact and Conclusions of Law which are incorporated herein by reference, the Board authorizes the Director of Nuclear Reactor Regulation to issue a license to Offshore Power Systems for the manufacturing by the end of 1999 of eight standardized floating nuclear plants at its facility located on Blount Island in Jacksonville, Florida. Said license will be subject to a condition as set forth in our Order, *infra*.

FINDINGS OF FACT

I. BACKGROUND

1. This initial decision involves the Application filed by Offshore Power Systems (Applicant or OPS) for a license authorizing the manufacture of eight standardized floating nuclear plants (FNPs) at its manufacturing facility located on Blount Island in Jacksonville, Florida, the last FNP to be completed by the end of 1999. Until recently, OPS was an unincorporated joint venture of Westinghouse Electric Corporation and Westinghouse International Power Systems Company, Inc. (WIPSCO),

Westinghouse having a 99% interest and WIPSCO having a 1% interest (OPS Ex. 20A; Staff Ex. 1). However, in a letter dated March 5, 1982, Applicant's counsel advised that OPS has become a division of the Water Reactor Divisions of Westinghouse Electric Corporation and that although the unincorporated joint venture, OPS, will remain in existence and will retain ownership of the manufacturing facility, all OPS personnel as of March 1, 1982, became personnel of the Offshore Power Systems Division of the Water Reactor Divisions of Westinghouse.

2. A FNP will be a totally integrated power station mounted on a floating platform. The manufacture and assembly of the FNPs will be done on a production line basis at the Blount Island facility (Staff Ex. 1).

3. The instant Application for a manufacturing license was submitted to the Atomic Energy Commission (AEC)² on January 22, 1973. It was docketed by the Commission on July 5, 1973. This Application was the first one accepted by the Commission for licensing pursuant to the provisions of Appendix M to 10 CFR Part 50 pertaining to the manufacturing license option of design standardization (Staff Ex. 1).

4. Under Appendix M of 10 CFR Part 50, an application for a manufacturing license must meet all of the requirements of 10 CFR Sections 50.34(a)(1)-(9) and 50.34a(a) and (b), except that any required information or analyses relating to site matters shall be predicated on postulated site parameters which shall be specified in the application. Furthermore, under Appendix M, an applicant for a manufacturing license must submit with the application an environmental report as required of applicants for construction permits, provided, however, that such environmental report shall be directed at the manufacture of reactors at the manufacturing site and, in general terms, at the construction and operation of reactors at hypothetical sites having characteristics that fall within the postulated site parameters.

5. The instant Application (OPS Ex. 20), as docketed by the Commission, was accompanied by a Plant Design Report (PDR) (OPS Ex. 21) and an Environmental Report (ER) (OPS Ex. 4). On various occasions since original docketing, the Application (OPS Ex. 20A) and the PDR have been amended (OPS Exs. 21A-21I) and the ER has been supplemented (OPS Exs. 5-10, 57-64).

6. The NRC Staff (Staff) performed a technical review and evaluation of the Application and of the PDR. As a result of this review and its own independent study, the Staff prepared a Safety Evaluation Report (SER) and four Supplements thereto. (fol. Tr. 1043, 7388; Staff Exs. 5,

² As of January 1, 1975, the Nuclear Regulatory Commission (NRC) assumed all the licensing responsibilities of the AEC under the Atomic Energy Act of 1954, as amended.

6). The Staff also prepared as part of its review a multi-part Final Environmental Statement (FES) (fol. Tr. 642; Staff Ex. 1; fol. Tr. 7014; Staff Ex. 3).

7. Pursuant to the Atomic Energy Act of 1954, as amended (AEA), the National Environmental Policy Act of 1969, as amended (NEPA), and the regulations of the AEC, the AEC published on December 10, 1973, a Notice of Receipt of Application for Manufacturing License and Availability of Applicant's Environmental Reports (Notice of Receipt) and a Notice of Hearing on Application for Manufacturing License (Notice of Hearing) (38 Fed. Reg. 34008). The Notice of Receipt advised that the Application had been docketed under one option of the Commission's recently announced standardization policy for nuclear power plants and would be governed by the regulations set forth in Appendix M, 10 CFR Part 50. The Notice of Hearing set forth the requirements to be satisfied prior to the issuance of the requested manufacturing license. The Notice of Hearing also appointed this Atomic Safety and Licensing Board (Board) to conduct the hearing and provided that any person whose interest might be affected by the proceeding could file, by January 9, 1974, a petition for leave to intervene with respect to the issuance of the requested manufacturing license. Since December 10, 1973, the Board has been variously reconstituted to consist of its present members.

8. Petitions for leave to intervene were filed. Ultimately the following persons or entities were admitted as intervening parties, and certain of their contentions were admitted as issues in controversy:

- (a) Kenneth B. Walton;³
- (b) Natural Resources Defense Council, Inc. (NRDC), an environmental organization with a nationwide membership;⁴
- (c) Atlantic County Citizens Council on Environment (ACCCE), New Jersey environmental organization;

³ Mr. Walton died on November 4, 1978.

⁴ On February 16, 1979, NRDC filed a motion seeking summary disposition with regard to its sole contention in this proceeding. This contention alleged that the Final Environmental Statement prepared by the Staff in connection with its review of the instant Application violated the requirements of NEPA in that it was not a programmatic impact statement. By Memorandum and Order dated May 25, 1979, the Board granted Applicant's and Staff's cross-motions for summary disposition and denied NRDC's motion for summary disposition (LBP-79-15, 9 NRC 653 (1979)). The Board held that the Final Environmental Statement complies with the requirements of NEPA in addressing the proposed action herein - the manufacture of eight FNPs - and that NEPA does not require the preparation of a programmatic impact statement.

(d) Board of Chosen Freeholders of Atlantic County, New Jersey (Atlantic County), the governing body of Atlantic County, New Jersey;

(e) The City of Brigantine (Brigantine), New Jersey.⁵

In addition, the State of New Jersey was granted leave to participate as an interested State pursuant to 10 CFR §2.715(c).⁶

9. A Notice of Evidentiary Hearing was issued by the Board on March 11, 1976, and the hearings began in late March 1976. Limited appearance statements were taken during the initial hearing sessions. After fifty-three days of evidentiary hearings, the record was closed on December 4, 1981. Only the Applicant and the Staff filed proposed findings of fact and conclusions of law on December 11 and December 30, 1981, respectively. On January 7, 1982, Applicant filed its response to Staff's submission.

II. HEALTH AND SAFETY

A. Description of the FNP

10. The basic shape of the FNP platform will be approximately square with overall dimensions of 400 by 378 feet. The plant systems and structures, in general, will be arranged on top of the basic platform structure. Within the platform structure, there will be 44-foot-deep bulkheads which extend the full length of the platform in perpendicular directions. These bulkheads will form the basic support structure for the hull bottom, sides, and main deck (OPS Ex. 21, Sec. 1.2.1; SER, fol. Tr. 1043, Sec. 1.4). For convenience, the description of the FNP is divided into seven basic areas discussed below. The nuclear steam supply system is discussed separately below.

Safeguards Area

11. Four trains of engineering safeguards systems will be provided. Each will be located in a compartment separate from the others and each will have its own diesel generator. The equipment in each train will be arranged in similar vertical configurations to maximize the separation

⁵ Brigantine's withdrawal as a party was approved in an Order of July 27, 1977.

⁶ New Jersey's motion to be dismissed was granted in an Order of November 6, 1981.

between trains. In order to ensure availability of equipment vital to safe shutdown in the event of the sinking emergency, three of the four safeguard trains of equipment will be located in three separate watertight compartments (OPS Ex. 21, Sec. 1.2.2.4; SER, fol. Tr. 1043, Sec. 1.4.1).

Containment Area

12. The containment will house the reactor and reactor coolant system. The containment system for the FNP will consist of a containment vessel and a shield building. The containment vessel will be a free-standing, welded steel cylindrical structure. A concrete shield building will enclose the containment and will provide an annulus within which any leakage from the containment following an accident will be collected prior to filtration and release to the environment. The containment fluid systems for the FNP include: (a) containment spray, (b) containment isolation, (c) an annulus filtration and (d) combustible gas control. The containment will utilize an ice condenser. The cavity beneath the reactor vessel is fitted with a refractory ladle to retard the process of melt-through in the postulated event of a degraded core accident (OPS Ex. 21, Secs. 1.2.5, 6.2 and 6.4.2; SER, fol. Tr. 1043, Secs. 1.4.2 and 6.2; Staff Ex. 5, *passim*).

Auxiliary Area

13. The auxiliary area will house the spent fuel pit and radwaste treatment systems. Spent fuel transfer equipment is designed such that the spent fuel pit will not be endangered by an accident involving the drop of a spent fuel cask. Each FNP will have radwaste systems to provide for controlled handling and treatment of liquid, gaseous and solid wastes. The liquid waste treatment system will process wastes from equipment and floor drains, decontamination operations, laboratory wastes and laundry and shower wastes. The gaseous waste treatment system will provide holdup capacity to allow decay of short-lived noble gases stripped from the primary coolant and provide treatment of ventilation exhausts through high efficiency particulate air and charcoal filters. The solid waste treatment system will provide for the solidification, packaging and storage of radioactive wastes generated during FNP operation prior to shipment offsite to a licensed facility for burial (OPS Ex. 21, Secs. 1.2.2.2, 11.2, 11.3 and 11.5; SER, fol. Tr. 1043, Secs. 1.4.3 and 11.1).

Control Area

14. The control room will be located in the control area. The control room will be surrounded by radiological shielding and will be provided with a ventilation system incorporating dual air intakes and the capability of filtered recirculation (OPS Ex. 21, Secs. 1.2.2.5 and 6.5; SER, fol. Tr. 1043, Secs. 1.4.4 and 6.4).

Turbine-Generator Area

15. The turbine generator area houses the steam and power conversion system. The steam and power conversion system for the FNP will be of conventional design, similar to those of previously approved pressurized water reactor plants but with certain features provided to accommodate platform movements, such as a spring-mounted turbine foundation and vacuum-balanced condenser. The system will be designed to remove heat from the reactor coolant by four steam generators and convert the heat to electrical energy by the steam driven turbine-generator unit. The condenser will transfer unusable heat in the cycle to the condenser cooling water. The entire system will be designed for the maximum expected power from the nuclear steam supply system (OPS Ex. 21, Secs. 1.2.2.6 and 3.7.2.1.1.8, and Chapter 10; SER, fol. Tr. 1043, Secs. 1.4.5 and 10.1).

Power Transmission Area

16. The power transmission area will house the main and auxiliary transformers as well as various switchyard equipment. Terminal facilities on the FNP for plant-to-shore 345 KV transmission circuits also will be provided (OPS Ex. 21, Secs. 1.2.2.7 and 2.10.1; SER, fol. Tr. 1043, Secs. 1.4.6 and 8.2).

Administration and Service Area

17. The administration and service area will contain the hotel, administrative and health physics facilities (OPS Ex. 21, Sec. 1.2.3; SER, fol. Tr. 1043, Sec. 1.4.7).

Nuclear Steam Supply System

18. The Westinghouse RESAR-3 (Consolidated Version) nuclear steam supply system without loop stop valves will be the nuclear steam

supply system for the FNP. The proposed initial core power for the FNP is 3411 MWt, 1150 MWe. The nuclear steam supply system consists of a pressurized water reactor, a four-loop reactor coolant system, and associated support systems. The reactor core will contain 193 fuel assemblies, each containing 264 fuel rods (17 x 17 array) of slightly enriched uranium encapsulated in Zircaloy tubes. Upper and lower reactor internals will provide support, location, orientation, and guidance for the fuel assemblies and their control rods as well as defining a flow path for the reactor coolant (OPS Ex. 21, Sec. 1.1.3, and Chapter 4; SER, fol. Tr. 1043, Secs. 1.5 and 4.1).

19. The reactor coolant system will consist of four essentially identical loops of piping, reactor coolant pumps, and steam generators. Reactor coolant will circulate through the core, where it will be heated; it will then go to the steam generator, where the heated coolant will transmit heat to the feedwater, thus producing steam. The coolant pressure will be controlled by a pressurizer and ancillary equipment attached to one loop (OPS Ex. 21, Sec. 5.1; SER, fol. Tr. 1043, Sec. 1.5).

20. Various auxiliary systems will provide essential support for reactor operation. The chemical and volume control system will maintain water inventory in the reactor coolant system and will provide flow to the seals of the reactor coolant pumps; it will also control the coolant chemistry, including the purity of cooling water and the concentration of boron. The boron recycle system will process effluent from the reactor coolant system and from the chemical and volume control system to remove particulate matter, fission products, activation products, and to reconcentrate boric acid. The safety injection system will function as part of the emergency core cooling system. Other plant systems performing as part of the emergency core cooling system will be the residual heat removal system and the upper head injection system. The safety injection system and the upper head injection system will supply highly concentrated borated water to the reactor coolant system in the event of a loss-of-coolant accident, or a steam line rupture. These systems will use pressurized accumulators for rapid response, and high, intermediate, and low head pumping systems for continuous injection and long-term recirculation cooling. The residual heat removal system will remove heat from the reactor core during normal plant cooldown and refueling and will provide low head injection and recirculation as part of the safety injection system (OPS Ex. 21, Sec. 6.3; SER, fol. Tr. 1043, Sec. 1.5).

21. Many features of the design of the FNP are similar to those approved previously for land based nuclear power plants now under construction or in operation, especially the McGuire Nuclear Station Units 1 and 2 (Docket Nos. 50-369 and 50-370), and the Catawba Nuclear

Station Units 1 and 2 (Docket Nos. 50-413 and 50-414) (SER, fol. Tr. 1043, Sec. 1.5).

B. Site Envelope

22. In accordance with 10 CFR Part 50, Appendix M, the Applicant has provided an envelope of site parameters and evidence to demonstrate that the proposed plants can be located and operated at sites which fall within the envelope of site parameters without undue risk to the public health and safety. Appendix M requires that, after the granting of a manufacturing license, a detailed review be made of each individual site during construction permit proceedings to determine that the proposed site does fall within the site envelope parameters (OPS Ex. 21, Chapter 2; SER, fol. Tr. 1043, Sec. 1.6). There is reasonable assurance that a number of sites along the East and Gulf Coasts meet the FNP site envelope parameters (Hawkins, Tr. 1489; SER, fol. Tr. 1043, Sec. 1.6). A contention concerning the appropriateness of the site envelope parameters was raised by Brigantine in this proceeding. The Board's Findings of Fact regarding this contention are set forth in Section IV. F, *infra*.

C. Safety Evaluation of the FNP

23. Applicant's PDR (OPS Ex. 21) has described the proposed design and site parameters for the FNPs, including the principal architectural and engineering criteria for the design, and has identified the major features or components for coping with operational emergencies and for protecting the health and safety of the public; these include plant design features required for compliance with 10 CFR Part 50, Appendix E. Amendments to the PDR will provide any further technical or design information which is required to complete the design but which can reasonably be left for later consideration. The PDR describes the quality assurance to be applied to the design, fabrication, construction, and testing of the facility (PDR, *passim*). The PDR also describes the design features for reactor vessel material surveillance required by 10 CFR Part 50, Appendix H (OPS Ex. 21, Sec. 5.2.5.).

24. The Staff's SER and supplements analyze and evaluate the following topics among others: postulated site parameters, including seismology, geology, hydrology, and meteorology; the design, fabrication, construction, testing, and expected performance of the FNP's structures, systems, and components important to safety; the response of the facility to various

anticipated operating transients and to a broad spectrum of postulated accidents; plans for conducting plant operations, the steps to be taken for industrial security, as well as the financial and technical qualifications of the Applicant (See fdg. 6, *supra*).

D. Research and Development

25. In the PDR, Applicant has described safety features or components which require research and development (OPS Ex. 21, Sec. 1.5). Applicant's R&D programs, which are essentially developmental in nature, are aimed at verifying certain aspects of the FNP design (e.g., core ladle performance; actuation system, etc.). The objectives and schedules for completion of many of these are summarized in the PDR.

E. Technical Qualifications of Applicant

26. The PDR sets forth the Applicant's technical qualifications (OPS Ex. 21, Sec. 13.1 and Appendix C). The Staff, in the SER issued on September 30, 1975, determined that the Applicant was technically qualified (Fol. Tr. 1043, Sec. 21.0). The Applicant's technical qualifications were not contested in this proceeding. We note, however, that in early 1979, faced with a cancellation of existing contracts for four plants, Applicant reduced its manpower level and suspended near-term plans to proceed with the final plant design and manufacturing phases. Staff concludes in its most recent supplement to the SER that the OPS organization is acceptable for the present level of ongoing activities and that the projected organization and staffing is acceptable to oversee the final design and manufacture of the FNPs. Staff advises that it will verify implementation of the projected organization and staffing for the final design and manufacture of a floating nuclear plant (Staff Ex. 6, Sec. II.J.3.1).

F. Financial Qualifications of Applicant

27. The Application (OPS Exs. 20, 20A, Sec. 6), setting forth the Applicant's financial qualifications, includes data indicating that the relevant costs for manufacture of the FNPs can be financed in the ordinary course of Applicant's business (See also Haga, Tr. 7724-28.). In Supplement 1 to the SER (fol. Tr. 1043, Sec. 20.3), and via updated testimony

(Peterson written testimony fol. Tr. 7708), the Staff analyzed Applicant's financial data and concluded that OPS was financially qualified.

G. Common Defense and Security

28. The activities to be conducted under the manufacturing license applied for will be within the jurisdiction of the United States (OPS Ex. 21, Sec. 1.1.1).

29. Applicant is not owned, dominated, or controlled by an alien, a foreign corporation, or a foreign government. The activities to be conducted do not involve any restricted data, and ultimately the nuclear fuel will be secured from sources of supply available for civilian purposes (SER, fol. Tr. 1043, p. 154).

H. Matters Arising from Lessons Learned from Three-Mile Island (TMI)

30. Proposed TMI-related requirements for manufacturing license applications were based on NUREG-0660, "NRC Action Plan Developed as a Result of the TMI-2 Accident (TMI Action Plan) (May 1980; Rev. 1, August 1980). This document was developed to provide a comprehensive and integrated plan for actions judged necessary by the NRC to correct, or improve, the regulation and operation of nuclear power plants based on experience from the accident at TMI-2. The Action Plan did not specifically address requirements for manufacturing license applications.

31. In March 1981 the NRC Staff issued NUREG-0718, entitled "Licensing Requirements for Pending Applications for Construction Permits and Manufacturing Licenses." On March 23, 1981, the NRC published a proposed rule (46 Fed. Reg. 18045) which identified additional licensing requirements applicable to manufacturing applications pending on the effective date of issuance of the final rule by the Commission. NUREG-0718, Revision 1 (issued in June, 1981) contained some revisions made by the NRC Staff to NUREG-0718. On July 14, 1981, the Commission authorized the Staff to proceed with review of pending manufacturing license applications on the basis of the positions contained in NUREG-0718, Revision 1, and the Commission's proposed final rule.

32. The Applicant responded, on July 15, 1981, to the positions in NUREG-0718, Revision 1, in its issuance of Amendment 28 to the PDR (OPS Ex. 21H). The action items discussed in this amendment are those that apply to the manufacturing license application and relate to informa-

tion categories identified as 3, 4, and 5 in NUREG-0718, Revision 1. These categories define the level of information which the Applicant must supply in order for the Staff to conclude that proposed requirements have been (or will be) satisfied. Category 2 items will be addressed at the operating license stage.

33. The Staff evaluated the Applicant's compliance with these requirements and issued its findings in September 1981, in Supplement No. 4 to the SER (Staff Ex. 6). The Staff's analysis addressed all TMI-related action items that are relevant to the issuance of a manufacturing license including evaluations of quality assurance, safety system monitoring and equipment testing requirements. More than twenty-five safety related systems, or procedures, were evaluated to assure that the public health is not endangered by the manufacture of the FNP.

34. On the basis of its review, the Staff concluded that the information supplied by the Applicant in its Amendment 28 to the PDR is sufficient to show compliance with NUREG-0718, Revision 1.

35. The Commission's final rule (10 CFR 50.34(f)) concerning Licensing Requirements for Pending Construction Permit and Manufacturing License Applications was published on January 15, 1982 (47 Fed. Reg. 2286). In the same month, the Staff issued NUREG-0718, Revision 2 entitled "Licensing Requirements for Pending Applications for Construction Permits and Manufacturing License," to provide guidance to applicants in complying with the new regulation (10 CFR 50.34 (f)).

36. In a letter dated February 2, 1982, the Board asked the Staff whether the Commission's final rule made it necessary to alter or supplement the contents of Supplement 4 to the SER. In a letter dated April 1, 1982, the Staff responded that it found no cause to change the contents of its Safety Evaluation Report, Supplement No. 4. However, the Staff drew the Board's attention to the new rule requiring that a comparative study be made of alternative hydrogen control systems, including cost-benefit considerations. Staff requested, without objection by Applicant, that the Board should condition the manufacturing license to ensure that all requirements pertaining to hydrogen control systems are fulfilled (See Order, *infra*).

I. Unresolved Generic Issues

37. The Staff identified thirteen unresolved generic safety issues applicable to FNPs which come under the scope of *Gulf States Utilities Co.* (River Bend Station, Units 1 and 2), ALAB-444, 6 NRC 760, 775 (1977). The Staff evaluated each of these issues and concluded in each case that there is reasonable assurance that FNPs can be manufactured and op-

erated, before these issues have been resolved, without undue risk to the health and safety of the public (Staff Ex. 6, Appendix C; Board question 2, fol. Tr. 7518; Staff testimony re: Board question 2, fol. Tr. 7556; Tr. 7685).

38. The Staff also testified that, with respect to Generic Issue A-12 (brittle fracture of support structures), there was no need to consider technical alternatives because the recommended resolution is effective, easy to implement in new plants and involves a minimal incremental cost. With respect to Generic Issue A-47 (existing criteria for non-safety grade control systems), the Staff testified that recent operating license reviews have not as yet identified the need for any additional generic requirements, but, if required at some later time, corrective measures would be available (Board question 3, fol. Tr. 7518, Staff testimony on Board question 3, fol. Tr. 7556). The Staff's evaluations of Unresolved Generic Safety Issues were not contested in this proceeding.

39. There is reasonable assurance that FNPs can be manufactured and operated before these generic issues have been resolved, without undue risk to the health and safety of the public.

J. Review by the Advisory Committee on Reactor Safeguards

40. The Advisory Committee on Reactor Safeguards (ACRS) completed its review of this Application during its General Meeting on October 16, 1981. In its letter to the Commission dated October 19, 1981, the ACRS concluded *inter alia* that ". . . the Advisory Committee on Reactor Safeguards believes that Floating Nuclear Plant units can be manufactured with reasonable assurance that they can be sited and operated without undue risk to the health and safety of the public"⁷ (fol. Tr. 7529).

III. COMPLIANCE WITH THE NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) SECTION 102(2) AND 10 CFR PART 50, APPENDIX D (NOW 10 CFR PART 51), AND APPENDIX M

41. Applicant submitted, in accordance with 10 CFR Part 50, Appendix D (now Part 51), and Appendix M, a series of Environmental Reports in support of its Application. Applicant's Environmental Report, Part I

⁷ Previous interim reports of the ACRS are contained in SER Supplements 1 (fol. Tr. 1043), 2 (fol. Tr. 7388), and 4 (Staff Ex. 6).

(ER I), as supplemented, considered the environmental impact of manufacturing activities to be conducted at the Blount Island facility (OPS Exs. 4-10). Applicant's Environmental Report, Part II (ER II), together with Appendices and Supplements, evaluated environmental considerations associated with offshore, estuarine and riverine siting of FNPs (OPS Exs. 57-64).

42. The Staff performed a review and evaluation of the information submitted by the Applicant in its ER. In addition, it performed an independent analysis and environmental evaluation and prepared an Environmental Statement in various parts. The Staff's Final Environmental Statement, Part I (FES I), dated October 1975, considered the environmental impact of the manufacturing activities to be conducted at the Blount Island facility (fol. Tr. 642). In September 1976, the Staff published Final Environmental Statement, Part II (FES II) relating to its environmental assessment of the siting of FNPs at various hypothetical locations (Staff Ex. 1). In February 1977, after receipt of comments on FES II from the Council on Environmental Quality, the Staff decided to publish an Addendum to FES II to address those comments. The Final Addendum to FES II was published by the Staff in June 1978 (fol. Tr. 7014).

43. While FES II was being prepared the Staff undertook a generic consideration of the comparative risks and consequences between FNPs and land-based nuclear plants concerning a postulated accidental release of radioactive material through the liquid pathway. Consideration of the liquid pathway analysis was included in Part III to the Final Environmental Statement (FES III) which was published in December 1978 (Staff Ex. 3).⁸

44. Meantime, however, on February 2, 1978, Applicant filed a Motion for Relief, including declaratory relief in the nature of a directive from this Board to the Staff. The directive sought would have excluded accidents with consequences more severe than design basis accidents (Class 9 accident issue) from the Staff's analysis of environmental effects in FES III. In an Order (unpublished) of February 23, 1978, this Board denied Applicant's Motion. Applicant filed a motion for reconsideration on March 18, 1978, which was also denied in an Order (unpublished) issued on March 30, 1978.

45. On April 17, 1978, Applicant filed a pleading with the Appeal Board which asked, among other things, for an order directing certification

⁸ In June, 1977 OPS had issued its Liquid Pathway Generic Study (OPS Ex. 65), and in February 1978, the Staff had issued its Liquid Pathway Generic Study (NUREG-0440) (Staff Ex. 4).

of the Class 9 accident issue. In an Order (unpublished), the Appeal Board granted this request on April 19, 1978, and subsequently refused to grant declaratory relief in ALAB-489, 8 NRC 194 (1978). On September 1, 1978, Applicant moved for reconsideration or certification to the Commission of the Class 9 accident issue. On September 29, 1978, the Appeal Board denied the request for reconsideration but certified to the Commission the question whether Class 9 accidents are a proper subject for consideration in the Staff's environmental statement on the FNP application (ALAB-500, 8 NRC 323). The Commission accepted review of the question, but on September 14, 1979, refused to grant the requested relief with respect to the Class 9 issue (CLI-79-9, 10 NRC 257).

46. As a result, accidents greater than design basis (so-called Class 9 accidents) were identified as subject to consideration in this case. These considerations particularly apply to Contention VII Radiological Impact on Swimmers and Boaters, to Contention XII Effect on Biota, and to Contention XIV Food Chain, *infra*.

47. FES III describes the major systems of the FNP, its manufacturing process, and the environmental effects of plant operation at hypothetical sites having characteristics that fall within the postulated site parameters. It compared the overall risk of accidental releases to the environment from land-based and floating nuclear plants resulting from postulated design basis accidents as well as from core-melt accidents. FES III also contains analysis of alternatives to the FNP and contains a cost-benefit analysis (Staff Ex. 3). The Staff concluded therein that the cost-benefit balance is favorable and the manufacturing license, subject to certain conditions for the protection of the environment, should be issued (Staff Ex. 3, Sec. 4).

48. Further in FES III, the Staff concluded that as to the siting of FNPs, "... there is a reasonable degree of assurance that the eight floating nuclear power plants proposed for manufacture can, with suitable modifications, be sited and operated as electric generating stations at yet to be specified sites in the offshore and shore zone waters of the Atlantic Ocean and the Gulf of Mexico." The Staff also concluded that "finding acceptable FNP sites in estuaries, rivers or near barrier islands will most likely be extremely difficult, but [it] cannot conclude that there are no acceptable estuarine, riverine or barrier islands locations for FNP emplacement when appropriate mitigative actions are taken" and that Applicants applying for a license to locate and operate a FNP at such sites "would have to demonstrate appropriate mitigative actions that would provide both

an acceptable level of environmental impact as well as an acceptable level of core-melt accident risk."⁹ (Staff Ex. 3, p. xiv).

49. The Staff identified a modification relating to the plant design stating that "The Applicant shall replace the concrete pad beneath the reactor vessel with a pad constructed of magnesium oxide . . . or other equivalent refractory material, that will provide increased resistance to melt-through by the molten reactor core in the event of a highly unlikely core-melt accident and which will not react with core-debris to form a large volume of gases" (Staff Ex. 3, p. xv).

50. Applicant proceeded to design a core ladle to be constructed of magnesium oxide (OPS Ex. 21, Sec. 1.2.12). The Staff evaluated this core ladle design and its thermal performance and concurred with the Applicant that the design requirements had been met. In particular, the Staff found that in the event of a highly unlikely core-melt accident, the ladle will delay melt-through by a period of between two and seven days, that it will not react with core debris to form a large volume of gases and that it will not have any deleterious effects on safety (Staff Ex. 5, Sec. VIII).¹⁰ A delay period of at least two days can provide significant benefits with regard to accident mitigation (Staff Ex. 3, pp. 3-48 and 3-49). It does not now appear feasible to provide complete containment of a molten core by enlarging the passive cradle (Appl's. testimony, p. 2; Tr. 7562-7563 and 7704-7707).

⁹ As a result of its agreement with the Environmental Protection Agency, the Staff concluded that the following requirements should apply if pertinent to the specific FNP site proposed by an Applicant (Staff Ex. 3, p. xvi).

- A. Demonstrate techniques for restoring the bathymetric characteristics of dredged areas at the FNP site.
- B. Demonstrate techniques for restoring hydrological characteristics of the natural estuarine and barrier island ecosystem processes, for example, circulation patterns, salinity gradients, and the transport and deposition of sediment.
- C. Demonstrate techniques for reestablishing original plant communities and wildlife habitat to self-sufficiency in areas where wetlands or landforms have been disturbed or destroyed.
- D. Demonstrate techniques for repopulating and reestablishing brackish/marine water areas with original species, including diadromous species.
- E. Demonstrate techniques for repopulating and reestablishing barrier island natural processes such as "dune building," beach "retreating," and overwash and inlet development.
- F. Demonstrate mitigative actions to replace a loss of fish, plant or wildlife productivity.

¹⁰ Both the Applicant (OPS Ex. 69) and Staff (fol Tr. 7556) provided supplemental written testimony in response to Board questions on core ladle design (fol. Tr. 7518). Applicant's written testimony was sponsored by Drs. D. H. Walker and H. J. Stumpf and Messrs. R. S. Orr and P. B. Haga (Tr. 7693-7708). Staff's written testimony was sponsored by Drs. D. Swanson and W. T. Pratt, and Mr. A. Marchese (Tr. 7557-7597).

51. Applicant and Staff have agreed to a testing program which will supply additional information and data regarding core ladle thermal performance (Staff Ex. 5, Sec. VI; Tr. 7698-7701).

IV. ISSUES IN CONTROVERSY AND A BOARD QUESTION

A. Contention I - Emergency Power

Brigantine Amended Contention 3:

"There are insufficient experience and data with respect to the functioning of the high voltage electrical cables which Applicant proposes to be buried in the seabed to transmit electricity from the shore to the facility and the undersea electrical cable that Applicant proposes for connection to the facility to provide adequate confidence that a reliable source of emergency power will be available for safe operation of the facility."¹¹

52. Transmission circuits for emergency power are not within the scope of the FNP design; specific designs for emergency power transmission will depend upon the site chosen. (Staff's testimony, p. 3) However, several approaches appear suitable. Two types of high voltage cable have been used both underground and underwater: the pipe-type and the self-contained type. Both are oil-filled and jacketed by a polyethylene coating to protect from the environment. Since moisture is completely excluded, both systems are used whether underground or underwater (Appl's. testimony, p. 3).

53. Submarine cable laid on shallow sea-bottom is susceptible to damage, *e.g.*, by ship's anchors. One such incident was reported for high-voltage cable (Tr. 1196). Protection from such damage will be necessary and one mode of providing such protection is to bury the cable deeper than anchors are known to penetrate. The cable then becomes both "underground" and submarine (Appl's. testimony, p. 2, 4; Tr. 1194).

54. The environment of a cable in a wet, underground installation is in many ways similar to the environment of a cable buried, underwater, so that the failure rate of one will be similar to the other (Tr. 1182). A tabulation of high voltage cable installation in various parts of the world

¹¹ Applicant's written testimony, OPS Ex. 22, was sponsored by Messrs. John W. Wanless, Raymond J. Conney, P. Blair Haga and Dr. Dee H. Walker, (Professional Qualifications fol. Tr. 1049, 1047, and 1024, respectively). The Staff's written testimony (fol. Tr. 1163) was sponsored by Mr. Faust Rosa (Professional Qualifications fol. Tr. 1161). Brigantine did not present witnesses.

summarizes experience with these types of installation (Appl's. testimony, pp. 6-7).

55. Experience within the U. S. with submarine cables of 345 kv. is rather limited. However, other countries have additional experience and there has been a substantial use of submarine cables at lesser voltages (but still very high). This background provides an adequate basis for estimating the reliability of high-voltage cables. Experience with telephone cables provides evidence of the mechanical, if not the high-voltage-electrical, reliability of underseas cables. Underseas cables have proven to be about 5 times less likely to fail than overland cables (OPS Ex. 21, Sec. 8.2.1; Staff testimony p. 5, Tr. 1202-7). On the other hand a failure of underseas cables usually takes much longer to repair (Tr. 1196). For this reason, prudent engineering design may call for provision of a spare circuit (Tr. 1192). With the spare circuit, a single cable failure could be overcome by switching to the spare; without it, failure of one cable would require plant shutdown in 72 hours (Staff testimony, p. 3; Tr. 1198).

56. A buried cable system would not be accessible to visual inspection. During cross-examination (Tr. 1187; 1223 et seq.; 1270 et seq.) Intervenors attempted to establish that this violates General Design Criterion 18, which states in part, "Electric power systems important to safety shall be designed to permit appropriate periodic inspection and testing of important areas and features such as wiring, insulation, connections,"

57. Physical and electrical integrity of the cable can be established without visual examination. Direct visual examination would require uncovering the cable - a process more likely to cause failure than to prevent it (Tr. 1225; 1268).

58. Normally cables are filled with oil under pressure. Any mechanical failure in the cable would cause oil to leak out and would be first indicated and detected by a loss in pressure. Later, the leak site should become evident by visual evidence of escaping oil (Tr. 1096-1099; 1115-7; 1187; 1277-90).

59. Breakdown of the electrical insulation either between conductors or between the cable and the environment can be determined remotely by standard electrical tests. Even relatively small leakage of electricity to the environment can be located by measurements made at the water surface above the cable (Tr. 1301-24).

60. Because the platform moves with respect to the sea floor, a flexible connection is required, whether the electrical cable be buried, strung above-water, or of some other design. Connections of this sort do not now exist. A development program for such a flexible connection has indicated the feasibility of designing the connection, but further testing (full scale) will be required before the final design can be proven effective.

Full scale testing is not expected to identify any significant problems (Staff testimony, pp. 5-6).

61. On-site emergency power is provided by four diesel-generator sets chosen to meet the requirements of General Design Criterion 17. Since only two of these would be required to shut down the plant safely, the on-site power supply for essential systems would be adequate even if all external power were lost (SER, fol. Tr. 1043, p. 108).

B. Contention II - Underwater Electrical Transmission Lines

ACCCE Contention 4b:

"Applicant has not given adequate consideration to prevention of hazards which could be caused by defects in underwater electrical transmission lines."¹²

62. Applicant and Staff considered possible hazards to people from electric shock, chemical effect of the cable insulation and sudden rupture of the cable. They found the probability of cable failure to be quite small, and the probability of someone being in hazardous proximity at the time of such failure to be even smaller. No shock hazard exists in normal operation. Should an accident expose the conductor, the cable would be promptly deenergized. No chemical hazard is apparent. Sudden rupture is very unlikely and the associated loss in oil pressure would cause rapid deenergization of the cable (App'l's. testimony, p. 2-4; Staff testimony, 2-4).

63. Applicant knew of no examples where ships, boats, or swimmers had been harmed by submarine cables (Tr. 3789).

C. Contention III - Marine Environment

ACCCE Contention 2:

"Applicant has not given adequate consideration to the effects of corrosion resulting in adverse changes in mechanical properties due to the effects of both a salt water environment and radioactivity. This contention further asserts that there should be a monitoring system to detect corrosion and other salt water effects."

¹² Applicant's written testimony, OPS Ex. 33, was sponsored by Messrs. John W. Wanless, Raymond J. Cooney, P. Blair Haga and Dr. Dee H. Walker (*Professional Qualifications* fol. Tr. 1049, 1047, and 1024, respectively). The Staff's written testimony (fol. Tr. 3792) was sponsored by Mr. Faust Rosa (*Professional Qualifications* fol. Tr. 1161). ACCCE did not call any witnesses and none of the Intervenors cross-examined.

Brigantine Amended Contention 6:

"There are substantial uncertainties as to the behavior of the reactor and essential safety systems in the marine environment."

64. In admitting this contention the Board noted ". . . it is understood and agreed that the phrase, 'reactor and essential safety systems' is construed to refer solely to Class I safety systems and 'substantial uncertainties' refers to particular unique effects on Class I safety systems from the floating platform and marine environment."¹³

65. A moored FNP is designed to operate during accelerations and angular displacements; the limits of these are included in the Site Envelope (OPS Ex. 21, Table 2.1-1). Any proposed site and mooring system for the FNP must be chosen or modified so that these plant motions will not exceed design limits (Staff's testimony, Kiessel, pp. 2-4).

66. FNP systems, components and component supports for loads resulting from wind and wave action can be designed on the basis of rigid body analyses, appropriate fatigue factors and the Site Envelope parameters (Staff's testimony, Kiessel, pp. 2-4; Tr. 2130, et seq.; SER, fol. Tr. 1043, p. 47).

67. Several types of components were analyzed for motions in excess of the design limits. Calculated equivalent static accelerations were less than the seismic accelerations which these components must be designed to withstand (OPS) Ex. 21, App. B, response to question 3, pp. B.9.2-5, 6; Appl's. testimony, p. 3).

68. OPS Report No. AD-7100-14A85 "FNP Platform Hull Drydocking Equivalency" Revision 2 (20 Feb. 1976) describes the methods for corrosion protection of the hull. Requirements for corrosion control, in-service surveillance and corrective maintenance provide a program equivalent to periodic drydocking, and are intended to assure safe performance of the hull over its forty-year lifetime (OPS Ex. 23, p. 3). Three corrosion control zones are defined: atmospheric, splash, and immersed (Staff's testimony, fol. Tr. 2028, p. 2; Tr. 1858-1859).

69. The atmospheric zone is wetted by rain, dew and spray. Aerosol particles of sea salt contribute to corrosion. This part of the hull will be

¹³ The Applicant's written testimony, OPS Ex. 23, was sponsored by Messrs. Joseph B. McAndrew, Clinton Dotson, Raymond J. Cooney, Robert A. Bruce, P. Blair Haga and Dr. D. H. Walker (Professional Qualifications fol. Tr. 1713, 1712, 1047, and 1024). The Staff's four separate written direct testimonies (fol. Tr. 1956) were sponsored by Messrs. Faust Rosa, Richard Kiessel, Herbert Conrad and Lauren Connery. Also, a fifth portion of Staff testimony written by two officers under his supervision, was adopted by and sponsored by Commander John Deck III, United States Coast Guard (Tr. 1947, 1955, fol. Tr. 2028) (Professional Qualifications of Mr. Rosa fol. Tr. 1161, and those of the four other witnesses fol. 1946). Neither ACCCE nor Brigantine presented witnesses.

protected from corrosion by a coating system consisting of alkyl silicate, inorganic zinc and vinyl copolymer (Staff testimony, fol. Tr. 2028, p. 2). Coating systems such as those proposed for the atmospheric zone have been in service since World War II (Tr. 1743).

70. The splash zone extends from two feet below the waterline to four feet above the waterline. In this zone the most severe corrosion problems are encountered (Tr. 1738-1739; 1789). The splash zone will be protected from corrosion by a coating of modified amine-cured epoxy resin filled with inert silicates (Staff's testimony, fol. Tr. 2028, p. 3). Coatings of the type proposed for use in the splash zone have been in service for only about seven years. Lifetime predictions are therefore based on a general knowledge of the coating chemistry and its characteristics but are supported by limited experience (Tr. 1740, 2069-2070). With proper maintenance, the splash zone will probably never need a complete recoating. Repair or replacement of the coating is discussed in OPS Document Number NA-1220-14A80, "Floating Nuclear Plant Platform Hull Corrective Maintenance Plan." Areas of defective coating can be made accessible by trimming the plant up to 1 degree, or through the use of cofferdams where necessary (Staff's testimony, fol. Tr. 2028, p. 4). The frequency and extent of splash zone coating maintenance will depend largely on the degree of mechanical damage caused by service vessels and flotsam. No more than 5% should require repair annually (Tr. 1803, et seq.).

71. The immersed zone will be protected by conventional marine coatings and by a cathodic protection system. Unprotected submerged steel would corrode at an estimated average rate of 0.005 inches per year (OPS Ex. 21, p. 3.12-46; Staff's testimony, fol. 2028, p. 6). This estimated rate does not include non-uniform corrosion in the form of pitting; however, penetration due to pitting in carbon steel diminishes to a minor fraction relative to total corrosion after long times such as the forty-year life of the FNP. Proper selection of welding alloys can minimize pitting problems in the region of welded joints. Hull plating thickness has been increased by 0.20 inches beyond that required for platform strength and thickness; this could provide an allowance for 40 years worth of (average) corrosion in the absence of any hull protection (OPS Ex. 21, pp. 3.12-46, 47; Tr. 1899-1900).

72. Each owner will be responsible for providing a suitable cathodic protection system at the operating site (SER, fol. Tr. 1043, p. 60). Included in the Site Envelope are functional requirements for the on-site cathodic protection system (SER, Supp. 2, fol. Tr. 7388, p. 8). The Applicant will provide cathodic protection during plant manufacture while the platform is afloat in the slipway (SER, fol. Tr. 1043, p. 59), but not

while the plant is being towed to the owner's site. Corrosion during the tow period should be negligible (Tr. 1732-1733).

73. An impressed current cathodic protection system operates by imposing an appropriate negative electric potential on the platform hull. At the proper potential, corrosion becomes negligible (SER, fol. Tr. 1043, p. 59). Hull mounted reference electrodes serve to automatically adjust the current employed and thus maintain the proper potential (SER, Supp. 2, p. 8, fol. Tr. 7388; Tr. 2026-2027). The system can be upgraded during the life of the hull structure if that proves necessary (Staff testimony, fol. Tr. 2028, p. 7).

74. Impressed current cathodic protection in seawater has been in use at least since 1929. The most extensive experience with these systems is with the U. S. Navy reserve fleet where numerous ships have been maintained in fresh water for more than twenty years at reduced corrosion rates (Staff's testimony, fol. Tr. 2028, p. 7). The basic difference between the fresh water experience with the reserve fleet and system operation in the ocean is due to the greater resistivity of fresh water; more current is required to protect a ship in salt water (Tr. 1876-1877).

75. None of the hull protection systems will prevent biological fouling of the hull (Tr. 1877). The Applicant has provided in OPS Document No. NA-1220-14A79, "Floating Nuclear Plant Platform Surveillance Plan," a program for periodic inspection of the platform hull. In order to assure the continuing effectiveness of corrosion prevention systems the U. S. Coast Guard (USCG) will conduct in-service inspections at four year intervals, or more frequently if deemed necessary by the local USCG Officer in Charge of Marine Inspection (Staff's testimony, fol. Tr. 2028, pp. 3, 6 and 7). To accomplish these inspections some defouling will be required (Tr. 2071-3). USCG inspections are required by law (Tr. 2023) and satisfactory resolution of any deficiencies found will be required for continued plant operation (Tr. 2100-2101).

76. If necessary, underwater weld repairs of the platform hull can be accomplished using established techniques (OPS Ex. 21, pp. 3.12-55, et seq.).

77. The plant ventilation system protects interior equipment by preventing entry of marine air to all spaces except the fuel building. Any uncertainty as to the performance of Class IE equipment would be unacceptable. This equipment generally is not qualified for the marine environment, so power, control and instrumentation subsystems must be effectively protected from airborne salt throughout the plant's life. Demisters remove all fog and mist; filters remove salt particles. Where important safety equipment is housed, filters with 99.7% efficiency (for particles greater than 1 micron) are used (Staff testimony, Rosa, fol. Tr. 1956, pp. 2-4;

Appl's. testimony, p. 1; Tr. 1954, Tr. 1980, Tr. 2106). Interior spaces are held at a pressure slightly greater than outside to prevent in-leakage (Tr. 1777-79). Relative humidity is controlled at or below 80% (Tr. 1913).

78. Particles smaller than 1 micron have little tendency to settle out (Tr. 2106). Below 80% humidity, any salt deposited on equipment will be dry salt (Tr. 1913). As long as it stays dry it is effectively non-corrosive (Staff's testimony, Rosa, fol. Tr. 1956, p. 4). The salt particle filters meet U. S. Navy specifications for salt removal in reactor compartment ventilation systems (Tr. 1979, Tr. 1991). Deleterious effects of salt deposition on plant equipment would accrue slowly (Tr. 1976); plant operation could continue in the marine environment for over a year without airborne salt removal (Tr. 1996; Staff testimony, Rosa, fol. Tr. 1956, p. 5). However, to provide an additional degree of protection the Applicant will specify that the owner acquire equipment to measure cumulative salt deposition (Applicant's testimony, pp. 1 and 2). Although the specific method(s) have not been selected, several appear feasible (Tr. 1909, et seq., Tr. 2136, et seq.). Such monitoring should detect significant salt deposition well before an equipment problem could develop (Tr. 1976).

79. Ventilation systems will be equipped with suitable instrumentation in order to monitor their performance and provide assurance that marine air is not entering protected areas (Tr. 2779-80; Tr. 1904).

80. During the period when the plant is towed to the owner's site, intrusion of marine air into spaces housing important safety equipment will be prevented by operation of the ventilation systems. Other spaces will either be ventilated or closed off. Power for ventilation systems will be provided during tow by the emergency diesel generators (Tr. 1758, Tr. 1771-1773). In the event of diesel generator failure during tow, it is expected that the load would be transferred to another diesel generator within approximately thirty minutes (Tr. 1884).

81. The fuel building is maintained at a slightly negative pressure with respect to the outside to prevent escape of any radioactive gases (Tr. 1839, et seq.). In the fuel building, equipment important to safety will be qualified for operation in the marine atmosphere (Appl's. testimony, p. 1; Tr. 1871-1873). With respect to the effects of radiation upon the mechanical properties of metals, experiments have shown that only neutrons have any effect (Staff's testimony, Conrad, fol. Tr. 1956, p. 2; Tr. 2080-2081). The reactor vessel and its internals are the only FNP components that are subject to "significant" neutron irradiation in the metallurgical sense (Appl's. testimony, p. 2; Staff's testimony, Conrad, fol. Tr. 1956, p. 3; Tr. 1950-1951). The reactor vessel is located within containment and is exposed neither to salt water nor to a salt atmosphere (Appl's. testimony, p. 2).

82. Radiation levels would have to increase by 8 to 10 orders of magnitude in those areas exposed to salt water before there would be even the potential for synergistic effects (Tr. 1846). No normal or accident condition has been identified that would produce this level of radiation exposure (Tr. 1845-1847).

83. The Auxiliary Raw Water (ARW) and Essential Raw Water (ERW) systems are the only safety-related systems exposed to basin water. Materials in these systems were selected for their proven corrosion resistance and strength (Appl's testimony, p. 2). Exposed joints between dissimilar metals will be protected by a coal-tar epoxy coating (OPS Ex. 21, p. 9.2-43a; Staff's testimony, Connery, fol. Tr. 1956, p. 4). The ARW and ERW systems do not come into contact with reactor coolant and are not exposed to neutron radiation (Staff's testimony, Connery, fol. Tr. 1956, p. 3).

84. Components of the nuclear steam supply system and associated safety systems will receive in-service inspection under the provisions of Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (Staff's testimony, Conrad, fol. Tr. 1956, p. 3).

D. Contention IV - Central Control Room

ACCCE Contention 9:

"Applicant has not given adequate consideration to failure or malfunction of control operations because the location of the structure housing the central control operations is in a relatively unprotected position, exposing this structure to severe meteorologic conditions and damage or destruction by fire, industrial sabotage, terrorists acts, flying debris or collisions." Further, "the design of the central control operation structure is inadequate to protect it from the hazards mentioned above."¹⁴

85. The control room is surrounded on three sides by reinforced concrete walls one or two feet thick and on the fourth side, which forms a part of the plant exterior, by steel plates of 1 1/8 inch. The roof and floor

¹⁴ Applicant's written testimony, OPS Ex. 24, was sponsored by Dr. Dee Walker and Messrs. Raymond Cooney, P. B. Haga and Richard Orr (Professional Qualifications fol. Tr. 1024, 1047, 1024 and 1329). Staff's written testimony (fol. Tr. 2536) was sponsored by Drs. Jacques Read and John O'Brien, and by Messrs. Kenneth Murphy and Ray Priebe whose Professional Qualifications fol. Tr. 2534. Staff's witnesses Phillip Matthews and Charles Long were added to the panel at Tr. 2798, with their Professional Qualifications fol. Tr. 2803. Subsequently, the Staff presented updated testimony (fol. Tr. 7620) sponsored by Owen Rothberg. ACCCE did not present witnesses.

are reinforced concrete two and three feet thick respectively. The control room is located approximately sixty-six (66) feet above basin water level, high enough to remain above water during the postulated sinking emergency (Tr. 2384, 2516; OPS Ex. 28, Sec. 6.5.3.1.2; Staff testimony, p. 1, fol. Tr. 2536; OPS Ex. 24, p. 1).

86. The control room is designed to withstand severe meteorological conditions such as those associated with tornados, hurricanes and high intensity seismic shock (Staff testimony, pp. 2-3, 5, fol. Tr. 2536; OPS Ex. 24, p. 2). The design of the control room will prevent damage from tornado generated missiles (Staff testimony, p. 4, fol. Tr. 2536; OPS Ex. 21, Secs. 3.5.3, 3.5.7; SER, Sec. 3.5.2; fol. Tr. 1043; Staff's updated testimony, p. 2, fol. Tr. 7620) (See Fdgs. *infra*, re. H. Aircraft and I. Ship Collision).

87. The control room is protected against floating fires external to the plant because it is well above basin water level. The FNP external fire protection system is designed to extinguish floating fires. It consists of a foam system which allows one hundred (100) percent coverage within 100 feet of the plant (Staff testimony, p. 3, fol. Tr. 2536; Tr. 2829).

88. A falling water film on the exterior walls will be provided for protection from radiant heat that could result from an oil fire in the basin area (SER, fol. Tr. 1043, Sec. 9.5.1).

89. The control room ventilation system is designed to protect the control room operators from effects of smoke and other combustion products (Staff testimony, p. 3, fol. Tr. 2536; OPS Ex. 21, Sec. 9.4.1).

90. The design of the FNP will enable an owner to meet the industrial security requirements of 10 CFR Part 73 and Regulatory Guide 1.17 (Protection of Nuclear Power Plants Against Industrial Sabotage) (OPS Ex. 24, p. 3). The owner of each FNP will be required to provide a comprehensive security program for the protection of the plant against external threats. The principal elements of such a program will include physical protection features to prevent or deter surreptitious entry, administrative measures to control access, a trained security force for plant surveillance, and a response capability by armed guards supplemented by offsite law enforcement authorities (Staff testimony, p. 6, fol. Tr. 2536).

E. Contention V - Transportation

ACCCE Contention 5:

"The Applicant has not given adequate attention to provisions for preventing accidents in the handling and transportation of

radioactive materials to and from the ocean site in the following areas:

- a. Provisions to prevent damage to platforms, mooring systems, reactor buildings and breakwater in event of barge collision and possible resultant flying debris, all resulting from rapid onset of severe, unforeseen, extreme meteorological conditions.
- b. Provisions to safeguard reactor plant and platform in event of fire aboard a nuclear fuel-transporting barge while barge is within breakwater, entering or leaving breakwater, or in close proximity to the offshore plant.
- c. Provisions to deal with a collision of a vessel with a barge or breakwater resulting in dispersal of hazardous cargo on or around the breakwater or on the floating plant."

Atlantic County Contention 3:

"Intervenor contests the adequacy of procedures for safe transfer of spent fuel and radioactive waste from the floating nuclear plant to the ship, to account for the peculiar characteristics of floating nuclear power plants."

Walton Contention:

"Adequate consideration has not been given by the Applicant to accidents, that could occur during transportation of radioactive materials between the facility and the shore."¹⁵

91. The utility owner performs radioactive material transfer operations (Appl's. testimony, p. 2). The method for transporting nuclear fuels will be included in the owner's application for an operating license (Staff's testimony, p. 9).

92. The plant will have a crane for transferring fuel casks between the plant and a barge (or other form of transport) alongside the plant (Appl's. testimony, p. 2). The cask handling crane will be designed to meet ANSI B30.6 standards for loads in excess of 200 tons (the largest spent fuel shipping cask proposed for licensing under 10 CFR 71 is only 125 tons) (Appl's. testimony, p. 2; Staff's testimony, p. 12 and Tr. 3961).

93. Choice of specific packages and the method for shipping radioactive material from the FNP are the responsibility of the utility owner. Design and testing requirements for shipping packages and requirements governing their transport have been issued by the Nuclear Regulatory

¹⁵ These related contentions were considered as a group. The Applicant's written testimony, OPS Ex. 34, was sponsored by Dr. Dee Walker, Mr. P. Blair Haga, and Miss Mary Ann Capo (Professional Qualifications fol. Tr. 1024, and 3831. The Staff's written testimony (fol. Tr. 3915) was sponsored by Joseph R. Levine, Dr. John A. O'Brien, Edward B. Tomlinson and Robert F. Barker (Professional Qualifications fol. Tr. 1476, 2534, and 3911). ACCCE, Atlantic County, and Mr. Walton did not present witnesses.

Commission (10 CFR Part 71), by the Department of Transportation (14 CFR Part 103, 46 CFR Part 146, and 49 CFR Parts 170-189), and by the U.S. Postal Service (Postal Service Manual, Sec. 124). These regulations require that radioactive materials, including spent fuel, be packaged for shipping in containers of special design. For spent fuel, the cask must be designed and licensed in accordance with 10 CFR Part 71 (Appl's. testimony, pp. 2-3).

94. An accident involving transfer of spent fuel would result in more severe radiological consequences than an accident involving transfer of low-level waste containers. Thus, detailed analyses of postulated accidents during transfer were limited to those involving spent fuel casks (Staff's testimony, p. 9; Appl's. testimony, p. 2). Six hypothetical accidents were analyzed involving a cask-drop during transfer from the FNP to a transport vessel (e.g. barge) (OPS Ex. 21, Sec. 15.4.7; Appl's. testimony, p. 3; Staff testimony, p. 10). These cask drop accidents are the worst possible within the design parameters and procedural controls (Staff's testimony, p. 10). They include a drop from the greatest height to which the crane can lift a cask above the water into the maximum depth of water acceptable for a site (Appl's. testimony, p. 3). No credit is taken for safety features or for the conservatism in design of cask handling system components (Staff's testimony, p. 9). None of the accidents analyzed caused the cask to rupture or to release any radioactivity (Appl's. testimony, p. 3).

95. Intervenors hypothesized that a cask might drop to the basin floor and roll under the FNP (Tr. 3867). No specific provisions have been made for such a possibility but the plant operator could, for example, bring out barge mounted cranes to retrieve the cask (Tr. 3868-9). Even if, for some unlikely reason, the cask remained unretrieved until corrosion allowed radioactivity to escape, the resultant amounts would be below maximum permissible levels a short distance away (Tr. 3873; 3877). A cask dropped into deep water would not rupture at depths less than 2,000 feet (Tr. 3977). Rupture at deeper depths would have little consequence in terms of radiological exposure (Tr. 3940); such an accident would be extremely unlikely (Tr. 3947).

96. Radiological consequences of a cask rupture were evaluated, even though accident analyses indicate that such a rupture will not occur (OPS Ex. 21, Sec. 15.4.7; Appl's. testimony, p. 3). Some radioactivity would pass through sea water to vent into the atmosphere. The resulting doses would be carried away from the site by meteorological conditions and would fall within the criteria of 10 CFR Part 100: i.e., would not exceed 300 rem thyroid; 25 rem whole body. This analysis considered iodine-131 and krypton-85 (Appl's. testimony, p. 3; Staff's testimony, p. 11; Tr. 3885).

97. The dose from 25 fission-product isotopes released in a cask-drop-rupture accident has been calculated for the maximally exposed individual. Only Cs-137 and Nb-95 contribute significantly. A swimmer who spends 200 hours in the close vicinity of the leaking cask will receive an exposure of only a few millirems (Affidavit of D. H. Walker submitted on March 29, 1977, in response to Board questions; Tr. 3896-3905).

98. The FNP has been designed to withstand damage from flying debris resulting from an explosion of a fuel-resupply barge without jeopardizing plant safety functions (Staff testimony, pp. 5, 7). The fire suppression systems on the FNP can cope with a diesel fuel barge fire (Staff's testimony, p. 8, and Tr. 2828). The same fire suppression systems should control simultaneous fires on a nuclear fuel transporting barge and its tug (Staff's testimony, p. 8).

99. Transportation of nuclear fuel or waste can be delayed or advanced a sufficient number of days to avoid storms. Also, shipments can be scheduled to avoid heavy traffic or other unsafe conditions (fog, low tide, etc.) (Staff Ex. 1, p. 6-87).

100. The plant is designed to withstand collisions or flying debris that might result from the sudden onset of severe weather during the handling or transport of nuclear fuel. The floating nuclear plant can withstand: (1) a 3500 ton service vessel striking the plant; (2) a helicopter weighing 19,000 pounds traveling at 30 miles per hour and having a kinetic energy of 0.57 million foot-pounds striking any critical part of the plant; and (3) a 25 ton tornado-borne boat impacting the plant at the water line with a velocity of 29.3 feet per second and a kinetic energy of .67 million foot-pounds. The plant can also withstand the usual spectrum of tornado borne missiles and debris required to be considered at land-based plants. The tornado-borne boat of 25 tons is assumed to strike the platform while the tornado wind and pressure drop are at their most severe combination, so that a superposition of loads occurs (Staff testimony, p. 4).

F. Contention VI - Site Envelope Data

Brigantine Amended Contention I:

"The postulated site parameters (10 CFR, Appendix M, Para. 2) relating to climatic, meteorology, tidal, or other particular natural conditions have not been properly selected and justified."¹⁶

¹⁶ The Applicant's written testimony, OPS Ex. 25, was sponsored by Dr. Dee Walker and Messrs. P. Blair Haga, Richard S. Orr and Robert C. Beebe (Professional Qualifications fol. Tr. 1024, 1329 and 1327). The Staff's written testimony (fol. Tr. 1483) was sponsored by

(CONTINUED)

101. Paragraph 2 of Appendix M to 10 CFR Part 50 requires that the applicant for a manufacturing license provide an envelope of postulated site parameters. Paragraph 5 of Appendix M to 10 CFR Part 50 authorizes the Commission to issue a license for one or more nuclear power reactors to be operated at sites not identified in the license application if the Commission finds that *inter alia* (1) "The applicant has described the proposed design of and the site parameters postulated for the reactor(s). . . ." The criteria for the design of nuclear power plants for protection against natural phenomena are stated in Criterion 2 of Appendix A to 10 CFR Part 50 and Appendix A to 10 CFR Part 100.

102. The acceptable sites for Floating Nuclear Plants must fall within an envelope of climatic, meteorological, tidal and other natural conditions associated with the marine environment. The ranges of acceptable conditions (and appropriate combinations of conditions) are summarized in the PDR at Table 2.1-1 (OPS Ex. 21) and in the SER, Supplement No. 4, (Staff Ex. 6) in Table 2.1 (revised). This summary first appeared in the SER (fol. Tr. 1043) at Table 1.2. It was revised in SER Supplement 2 (fol. Tr. 7388) and again, as noted, in Supplement 4. The table in Supplement 4 is labeled Table 2.1 (revised). Transcript references to "Table 1.2 (revised)" refer to the version in SER Supplement No. 2.

103. One important suite of parameters relates to water depth: (1) the plant must not hit bottom under low water conditions; (2) if the plant were to sink, it must come to rest so that no flooding would occur in areas essential to safe shutdown of the reactor. Many conditions or possible events can influence the range of acceptable depths; these include: astronomical tides; storms, including hurricanes or tornadoes; tsunamis; seiches; and earthquakes (SER Supp. No. 4, Table 2.1, revised).

104. Tidal ranges are site specific and must be determined at the chosen plant location. Limits on the maximum and minimum depth at the plant site include an allowance for these tidal variations. Other events (hurricanes, tsunamis) are then assumed to add water at high tides or withdraw water at low tides but the resulting water depths must remain within the prescribed range (Tr. 1333).

105. Rare events such as tsunamis, the probable maximum hurricane, or the "hundred-year storm" are not assumed to occur at the most extreme high or low tide, but rather are considered to occur at "ten percent exceedance" levels. These are maximum or minimum levels that are

Edward F. Hawkins, Gale P. Turi, Joseph R. Levine, Earl H. Markee, Jr.; and "Supplemental Testimony" (also fol. Tr. 1483) was sponsored by Renner B. Hoffman (Professional Qualifications fol. Tr. 1476). On June 18, 1976 Mr. Lewis G. Hulman substituted for Staff witness Hawkins (Professional Qualifications fol. Tr. 1520). Brigantine did not present witnesses.

equalled or exceeded by no more than ten percent of the predicted monthly maximum or minimum over a continuous 19 year period. Since the design basis tornado is even less probable, it was assumed to occur in conjunction with the more common tidal condition known as mean low water (OPS 21, Secs. 2.3.1, 2.13; Tr. 1340).

106. Hurricane winds produce storm tides that can combine with astronomical tides to produce extremes of high or low loading on the FNP structures, and extreme waves that will affect plant motions and challenge the capabilities of the mooring system (OPS Ex. 21, Table 2.1-1, and Sec. 3.3.1; Appl's testimony, pp. 2-3). Two levels of hurricane intensity have been considered in the definition of site envelope parameters. The "hundred-year storm" is a storm of such severity that in any one year it has only a 0.01 probability of occurring (Tr. 1336). The "probable maximum hurricane" is even less likely to occur. It represents the most severe hurricane that can probably occur in the region considered. The probable maximum hurricane characteristics have been developed from historical data by the Weather Bureau, now the National Oceanographic and Atmospheric Administration, or NOAA (SER, Section 2.2, fol. Tr. 1043).

107. The probable maximum hurricane characteristics provide the design basis winds for structural loading production of waves, surge and drawdown (OPS Ex. 21 Table 2.1-1; Staff's testimony p. 2). The hundred-year storm represents the operating basis conditions for direct structural loading, wave production, plant motion, and surge (Appl's testimony pp. 2-3). Characteristics of the probable maximum hurricane and the hundred-year storm should be determined for each particular plant site, since particular sites may expect less severe storms than those postulated in PDR Table 2.1-1 (OPS Ex. 21). Changes in water level are particularly site specific, but many sites appear suitable with respect to water depth (Staff testimony, p. 2).

108. Site envelope parameters were chosen considering the occurrence of a "hundred-year storm" after the plant has sunk and is resting on the bottom (OPS Ex. 21, Sec. 2.3.2) but do not consider the probable maximum hurricane to occur over the sunken plant (SER, Sec. 2.3.2, fol. Tr. 1043). Expected plant motions during the hundred-year storm and the probable maximum hurricane will be determined by model testing (SER Sec. 3.7.2, fol. Tr. 1043). During the probable maximum hurricane, plant motions must not result in contact with the basin floor; site parameters are chosen to prevent this (OPS Ex. 21, Table 2.1-1).

109. A tornado, like a hurricane, brings winds that cause waves and plant motions. The plant structure must withstand the force of these winds; as the tornado passes the atmospheric pressure drops markedly, so the structure must also withstand the effects of this pressure change. Torna-

does may also carry various objects which might strike the plant; the plant must be designed to withstand impact from a variety of such missiles (SER Supp. 2, Table 1.2 (revised), fol. Tr. 7388).

110. The platform must not contact bottom during passage of the design basis tornado (OPS Ex. 21, Sec. 2.3.1). The characteristics of this tornado are defined in Regulatory Guide 1.76 and discussed in detail in WASH-1309, "Technical Basis for Interim Regional Tornado Criteria," May 1974. The design basis tornado is also used to define the maximum pressure loading on plant structures, and is one of the design basis events for plant motions resulting from extreme winds (Appl's. testimony p. 3; OPS Ex. 21, Table 2.1-1).

111. Principal characteristics of the design basis tornado are: rotational wind speed 290 mph, maximum forward speed 70 mph and a pressure drop of 3 psi (OPS Ex. 21, Table 2.1-1). These represent conservative upper bounds (Staff's testimony, Hawkins, et. al., p. 8). These were selected on the premise that the probability of worse conditions occurring should be on the order of 10^{-7} per year per reactor site (Staff testimony pp. 7-8). Tornadoes occur principally over land, but may pass out to sea. Design basis tornado characteristics were based mainly on data collected over land. Such data appear appropriate to defining characteristics in the near-shore region over water, and probably provide a conservative design basis (Tr. 1698-1699).

112. Waterspouts are small regions of intense rotational winds which develop over water and draw water into the rotating field. Potential effects of a waterspout upon an FNP are similar to those produced by tornadoes; however, the maximum wind force and pressure drop are only 30% as great as the design basis tornado. The large margin between waterspout and tornado forces assures that waterspout loading will not be limiting for either plant design or siting (OPS Ex. 21, Sec. 2.7.5 and Appendix 2D; SER, Sec. 2.8.1.1, fol. Tr. 1043).

113. The owner will be required to analyze plant motions resulting from the design basis tornado and to demonstrate that neither platform contact with the basin floor nor acceleration and/or angular displacements in excess of site envelope limits occurs. No further evaluation of tornado intensity parameters would be necessary unless the owner wished to postulate a less severe design basis tornado for design of the specific site (Appl's. testimony, p. 5).

114. Tsunami are long period sea waves caused by underwater disturbances such as an earthquake, a volcanic eruption or a landslide (OPS Ex. 21, Sec. 2.3.1; SER, Sec. 2.8.4, fol. Tr. 1043). As tsunami waves approach land, bottom friction causes wave amplification and a significant series of alternating surges and drawdowns may occur (Staff's testimony, Hawkins,

et al., p. 3; OPS Ex. 21, Sec. 2.3.1). A tsunami is therefore an event of interest in the site envelope limitations for maximum and minimum basin water depth (OPS Ex. 21, Table 2.1-1). The Applicant has not included tsunami as an event for which plant accelerations and angular displacements are compared to site envelope limits, because Applicant believes that the response of the plant would be a gentle rise and fall analogous to the response to tidal fluctuations (OPS Ex. 21, Sec. 2.3.1).

115. Global records of tsunami indicate that the Pacific is the most active region while tsunami along the Atlantic and Gulf Coasts have been both rare and of small magnitude (Staff's testimony, Hawkins, et al., p. 4; Appl's testimony, p. 3).

116. Each owner will be required to estimate tsunami magnitudes based on evaluation of potential initiating mechanisms, both local and distant (SER, Sec. 2.8.4, fol. Tr. 1043).

117. In an enclosed or semi-enclosed water body, events such as an earthquake, a landslide or a wind storm can produce a standing wave oscillation known as seiche. The possibility of a seiche can affect the choice of maximum and minimum water depth. The "probable maximum seiche" is the one that would be produced by the most severe combination of meteorological and geological parameters that are reasonably possible at a site. Each site must be evaluated for its specific characteristics relevant to seicheing (Staff's testimony, pps. 6, 7).

118. 10 CFR Part 100, Appendix A, defines the earthquake which a plant must be designed to withstand in terms of the magnitude and probability of occurrence. Regulatory Guide 1.60 provides supplementary information. On this basis, a safe shutdown earthquake (SSE) having maximum accelerations at the basin floor of 0.3g (horizontal) and 0.2g (vertical) will meet the requirements for most locations along the Atlantic and Gulf Coasts (Appl's testimony, p. 4; Staff's testimony, Hoffman, p. 5; SER, p. 33, fol. Tr. 1043; OPS Ex. 21, Sec. 2.5.3 and Table 2.1-1).

119. The Site Envelope parameter limits for horizontal SSE acceleration are derived from the maximum ground acceleration of 0.3g (Tr. 1442, 1462); the site envelope parameter limit for SSE vertical motion is the Regulatory Guide 1.60 ground response spectrum corresponding to a maximum vertical ground acceleration of 0.2g (OPS Ex. 21, Table 2.1-1; OPS Ex. 21, Sec. 2.5.2.2). Owners will be required to show at each site that the site design and mooring system meet the specifications based on a maximum acceleration (g value), as appropriate for that location, applied at the ocean bottom (Staff's testimony p. 5; Tr. 1477-1478).

120. Structural loadings result from the accumulation of precipitation on plant roof surfaces. The Site Envelope requires that the expected rainfall rate not exceed 13 inches per hour (OPS Ex. 21, Table 2.1-1). The

maximum precipitation rate will be less at all Atlantic and Gulf coastal locations (Appl's testimony, p. 5; Staff's Testimony, Hawkins, et al., p. 5). The Staff's estimate of precipitation rate at sites along the Atlantic and Gulf Coasts is based on the Probable Maximum Precipitation defined in Hydro-Meteorological Report 33.¹⁷ Probable Maximum Precipitation is defined by the U.S. Department of Commerce (NOAA) as the theoretically greatest depth of precipitation for a given duration that is meteorologically possible over the applicable drainage area that would produce flows of which there is virtually no risk of being exceeded" (Staff's testimony, Hawkins, et al., p. 5).

121. The platform hull is designed for a minimum service temperature (in air) of -15°F , although a lower service temperature can be accommodated by using a different hull steel (OPS Ex. 21, Sec. 3.12.4.3). The Site Envelope requires that the minimum air temperature, at 0 to 5 meters above the basin surface, be no lower than -26°C (-15°F) (OPS Ex. 21, Table 2.1-1). Sites exist along the Atlantic and Gulf Coasts which will satisfy this limit (OPS Ex. 21, Appendix 2D; Sec. 2.7.2).

122. Plant cooling water systems required for safe shutdown are designed to transfer their maximum heat load at a maximum heat sink temperature of 35°C (95°F) (Appl's testimony, p. 6). The Site Envelope requires that basin water temperature not exceed 35°C (OPS Ex. 21, Table 2.1-1). Sites along both the Atlantic and Gulf Coasts will satisfy this limit (SER, p. 36, fol. Tr. 1043; OPS Ex. 21, Appendix 2D, Sec. 2D.5).

123. Requirements for platform hull material toughness are based on minimum service temperature (OPS Ex. 21, p. 3.12-27a). Applicant requires that the Nil-Ductility Transition Temperature (NDTT) of platform exterior plating be -34.4°C (-30°F) or lower. This temperature results from the basic requirement that the NDTT of platform exterior plating be approximately 33.3°C (60°F) below the minimum service temperature of the bottom shell (OPS Ex. 21, p. 3.12-27f). The Site Envelope requires a minimum basin water temperature of -1.9°C (28.6°F) (OPS Ex. 21, Table 2.1-1). This temperature is the freezing point for sea water of average salinity (OPS Ex. 21, pp. 2.7-5, 2.7-6). Slightly lower temperatures resulting from localized high salinity would not be significant (Appl's testimony, p. 6).

124. Climatic, meteorological, tidal and other natural conditions are well known at many ocean and inshore locations where FNP's might be

¹⁷ U.S. Department of Commerce, U.S. Weather Bureau (now U.S. Weather Service, NOAA), "Seasonal Variation of Probable Maximum Precipitation, United States East of 105th Meridian for Areas 10 to 1,000 Square Miles," Washington, D.C., 1956.

sited (Tr. 1382-83, 1503-04). Numerous sites can meet the appropriate site design criteria (Staff's testimony, p. 8, Tr. 1529).

G. Contention VII - Radiological Impact on Swimmers and Boaters

ACCCE Contention 3d:

"Applicant has not given adequate consideration to the radiological impact on humans who may boat or swim in the vicinity of the floating nuclear plant."¹⁸

125. The plant is designed to comply with regulations governing the radiological impacts on humans, including swimmers and boaters. Applicable regulations include 10 CFR Part 20, the Annex to Appendix I of 10 CFR Part 50 and 10 CFR Part 100 (Appl's testimony, p. 1; Staff Ex. 1, Sec. 11.3, p. 11-7). The Maximum Permissible Concentrations of radioactivity in air and water above natural background for unrestricted use are defined in 10 CFR Part 20, Appendix B, Table II. The amount of radioactivity discharged from a FNP during normal operation has been estimated and the resultant average concentrations in air and surrounding water have been compared with the Maximum Permissible Concentration limits. They are below the acceptable limits for all isotopes (OPS Ex. 21, Sec. 12.4, et seq.).

126. Annual doses resulting from released airborne radioactivity have been estimated as a function of distance from the plant assuming poor conditions for dispersion (OPS Ex. 21, Secs. 2.7.1, 12.4.4). These estimates show that dose guidelines for continuous occupancy (10 millirad gamma and 20 millirad beta) can be met at distances greater than 200 meters from the plant. This is about as close as a boat could approach a typical breakwater (Tr. 3841). At 200 meters a swimmer or boater would receive only 0.16 mrem from airborne radioactivity in 100 hours.¹⁹

127. Additional exposure would result from direct radiation. In 100 hours at 200 meters a swimmer or boater would receive 0.08 mrem - a

¹⁸ Applicant's written testimony, OPS Ex. 35, was sponsored by Dr. Dee Walker, Mr. P. Haga, and Miss Mary Ann Capo (Professional Qualifications fol. Tr. 1024, and 3832). The Staff's written testimony (fol. Tr. 3849) was sponsored by Dr. Reginald Gotchy (Professional Qualifications fol. Tr. 3847). ACCCE did not present witnesses.

¹⁹ Dose values in Appl's testimony, p. 2, were revised in PDR Amendment 24 (OPS Ex. 21B) to the current value of 0.16 mrem per year in compliance with Regulatory Guide 1.112 (issued April, 1976), NUREG-0017 (issued April, 1976), and Regulatory Guide 1.109 (published March, 1976), and Revision 1 (issued October, 1977).

small fraction of the natural background radiation (OPS Ex. 21 12.4.4; Appl's testimony, p. 2; Tr. 3844).

128. Radioactivity released in liquids discharged from the plant would have even less effect. From 100 hours of swimming in the thermal plume of the plant at a distance of 200 meters, combined with 100 hours of boating in the plume mixing zone, a person would receive less than 0.001 mrem.²⁰ Such amount is negligible (OPS Ex. 21, Sec. 2.8; Staff's testimony, p. 2; Tr. 3855).

129. Doses from various isotopes that might be released during a series of postulated accidents were calculated assuming poor conditions for atmospheric dispersion (OPS Ex. 21, p. 15.3-1f et seq. and p. 15.4-10 et seq.; OPS Ex. 21, Sec. 12.7.1). The calculations show that dose guidelines for the exclusion distance are met at a distance of 500 meters and for the low-population boundary at 1200 meters, for typical sites. The actual distances are site specific and can be definitely established only for a known location (Appl's testimony, p. 3).

130. Hearings on this contention were held on Nov. 3, 1976, and did not involve accidents greater than design basis. Subsequent events brought these more severe accidents under consideration (See fdgs. 43-46, *supra*).

131. As a result, accidents greater than design basis (so-called Class 9 accidents) were identified as subject to consideration in this case. These considerations particularly apply to this contention, to Contention XII Biota and to Contention XIV Food Chain, *infra*.

132. Staff has considered such accidents in its FES III (Staff Ex. 3) and in its Liquid Pathway Generic Study (Staff Ex. 4). That study showed direct exposure to waterborne radioactivity to be a much less serious problem than possible exposure through the Food Chain (Staff Ex. 4, Ch. 6, p. 6-31). Exposure to swimmers near the plant was relatively small, with the maximum exposed individual (total body) receiving 1 rem.

133. Radioactive exposures at the shoreline due to waterborne radioactivity were calculated to be more serious with the maximum individual receiving 230 rem total body dose. However, the assumptions in this calculation were quite unrealistic: (1) All activity reaching the shoreline was assumed to be completely retained there; (2) following the accident no mitigating actions were considered to have been taken. Therefore the calculated values represent much more serious exposures than are likely to occur.

²⁰ Dose values were similarly revised to 1.2×10^{-4} mrem for swimming and 4.3×10^{-5} for boating (OPS Ex. 21).

H. Contention VIII - Aircraft

Brigantine Amended Contention 4:

"The probability of aircraft crashing into the facility is understated, since the analysis is based on the frequency of commercial aviation flights without regard to the frequency of other kinds of flights, e.g., military and general aviation."

Atlantic County Contention 2:

"With the continuance of air traffic and increases to air traffic along the Atlantic sea coast, we believe that the proposed Floating Nuclear Plants located in said zone should be constructed to withstand the effects of a possible collision with any existing size aircraft that may fly over or in the vicinity of the site and any reasonably foreseeable large size aircraft built during the lifespan of the proposed plants that may operate as above without damage to the reactor core such that dosages of harmful radiation in excess of required limits would occur.

Our basis for this belief is that:

- a. The crash probability is sufficiently high.
- b. The resultant damage to the proposed plants and attendant effects on radiological safety in the event of a collision is sufficiently great.
- c. The combination of the above indicate that the plant should be so designed."

ACCCE Contention 6:

"The applicant has not given adequate consideration to possible accidents resulting . . . from an intentional collision by an aircraft as part of industrial sabotage."²¹

134. For statistical purposes the National Transportation Safety Board divides general aviation aircraft into "large" and "small" with the break occurring at 12,500 pounds (Tr. 3467). Safety areas of a floating nuclear plant are heavily protected against tornado missiles. This protection is more than enough to prevent penetration by "small" aircraft (Appl's. testimony p. 3).

135. The shield building could withstand considerably larger impacts, e.g., a 70,000 pound F-111B at 100 miles/hr. (Tr. 3574-3575, 3747), but the overall plant is not designed to withstand impacts due to large aircraft.

²¹ Applicant's written testimony, OPS Ex. 26, was sponsored by Drs. D. H. Walker and Douglas Shafer and by Messrs. P. B. Haga and John Hanst (Professional Qualifications fol. Tr. 1024, 2881 and 3419). Staff's written testimony (fol. Tr. 3636) was sponsored by Jacques Read, John O'Brien and Ray Pribe (Professional Qualifications fol. 2534). Brigantine, Atlantic County and ACCCE did not present witnesses.

Accordingly the plant site must be chosen so that such crashes are extremely unlikely (Appl's. testimony p. 1).

136. Table 2.1-1 of the Plant Design Report identifies plant-site interface requirements and includes the requirement that the probability of an aircraft crashing into the plant and resulting in consequences exceeding the guidelines of 10 CFR Part 100 must be of the order of 10^{-7} per year, or less (OPS Ex. 21); which probability is set forth in Regulatory Guide 1.70, Rev. 2 (NUREG-75/094, Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants, Sec. 2.2.3.1.).

137. Regulations do not require inclusion of an intentional crash into an FNP as a design basis event (Staff testimony, p. 7).

138. Procedures for determining crash probabilities are well established; probabilities depend upon the target area of the plant, the frequency of overflights, and the frequency rate with which aircraft crash. Frequency of overflight depends, in turn, on total aircraft traffic and proximity to air routes. Crash probability rises sharply within 5 miles of airports, but the airport effect is negligible beyond that distance (Appl's. testimony, p. 2; Tr. 3425-3426).

139. Applicant selected several locations along the Atlantic and Gulf Coasts, all more than 5 miles from airports, and analyzed the crash probability for military aircraft and for large and small private planes. The applicant used appropriately conservative values for the parameters in this analysis (OPS Ex. 21, Appendix 2B; Tr. 3610-3611, 3477, 3484). For each of the sites studied, the analysis showed that the threat of a crash by all types of aircraft at the site was of the order of 10^{-7} per year, or less (Appl's. testimony, pp. 2, 3).

I. Contention IX - Ship Collision

Brigantine Amended Contention 5:

"The probability of ship collisions is understated, since inadequate consideration is given to potential changes in the pattern of ship traffic and the character of ships and their cargoes over the 40-year life of the facility."

Pertinent Part of ACCCE Contention 6:

". . . the Applicant has not given adequate consideration to possible accidents resulting from a collision of the floating plant with a ship. . . ."22

²² The Applicant's written testimony, OPS Ex. 27 was sponsored by Drs. Dee H. Walker, Douglas H. Shaffer and Henry J. Stumpf, Capt. Derek R. King, Ms. Hyla Napadensky and
(CONTINUED)

140. A floating nuclear plant should be located so as to insure a low risk of public exposure (10 CFR Part 100). Various shipping hazards might lead to onsite accidents resulting in unacceptable release of radioactivity. According to 10 CFR §100.10 these must be considered design basis events unless the probability of occurrence is very low. Regulatory Guide 1.70, Rev. 2, §2.2.3 indicates that an accident probability on the order of 10^{-7} per plant per year is sufficiently low that such accident need not be considered in the design basis.

141. Consequences of accidents with substantially greater probability must be considered in designing the plant, although NUREG-800 (Standard Review Plan) §2.2.3 acknowledges the difficulty of accurately appraising such low probabilities and suggests some leeway should be provided. Several types of hazards must be considered; these include: explosions; flammable vapor clouds (delayed ignition); toxic chemicals; fires; collisions with the plant; and liquid spills (Reg. Guide 1.70). In the context of a floating nuclear plant, these hazards may be grouped into various classes of shipping accidents (OPS Ex. 21, Appendix 2A):

- a. liquefied natural gas carrier accident;
- b. munitions ship explosion;
- c. ship collision with plant or breakwater;
- d. tanker collision with breakwater leading to fire;
- e. vapor-air explosion in a tanker;
- f. toxic vapor cloud released during an accident to a chemical carrier; and
- g. service ship accidents.

Each of these accident classes has been evaluated as a potential hazard to the plant with respect to the defined safety objectives (App'l's. testimony p. 2, 4; SER Supp. 2, App. C, Sec. 5, fol. Tr. 7388).

142. The nearby explosion of a munitions ship or an accident involving a liquefied natural gas (LNG) carrier could well result in unacceptable damages to a floating nuclear plant. Therefore the plant must be located where the probability of such damaging events is less than about 10^{-7} per year (OPS Ex. 21, Table 2.1-1; SER Supp. 2, Table 1.2 (revised)). Large scale shipments of hazardous materials by sea can be identified and their paths established. Projections of munitions traffic and LNG carrier traffic in the plant vicinity and the corresponding accident probabilities will be highly dependent upon the site chosen; each plant owner will be required to demonstrate that the plant site meets appropriate guidelines (SER, Sec.

Mr. P. Blair Haga (Professional Qualifications fol. Tr. 1024, 2881). The Staff's written testimony (fol. Tr. 3284) was sponsored by Drs. Jacques Read and John A. O'Brien, (Professional Qualifications fol. Tr. 2534). Neither Brigantine nor ACCCE called witnesses.

2.10.2, fol. Tr. 1043). On the basis of present traffic patterns, sites can be found where the probabilities of such accidents are acceptably low (OPS Ex. 21, Sec. 2.A.6).

143. Future ship traffic patterns can be predicted based on past and current practice. Although such forecasts cannot be made with great accuracy, they can be made with confidence when the forecasts merely set upper-limits, and the limits chosen are quite high, or are based on very conservative assumptions (Tr. 3109, 3210). Forecasts of munitions-ship traffic can be based on many years experience (OPS Ex. 21, Sec. 2A.4; Tr. 2990). Forecasts in 1976 of LNG traffic were based on only 4-6 years of experience (Tr. 2990) and accordingly have been supplemented by economic projections of LNG traffic growth (OPS Ex. 21 Sec. 24.6; Tr. 2994). LNG tankers will normally travel directly from the open sea into LNG handling terminals and, with the possible exception of shipments from South America, would not travel along the East Coast of the United States (OPS Ex. 21, Sec. 2.A.6). Barge traffic along the Eastern United States is expected to offer a negligible hazard (Tr. 3042-3067, 3309-3312). It must be noted that not all forecasts with respect to hydrocarbon supplies and demands have been correct (Tr. 3062, 3064).

144. Improvements in ship design and better safety regulations should reduce future accident probabilities. The lower relative costs of larger ships point to the future use of fewer but larger ships. These are expected to have greater draft and are therefore less likely to be found in the shallow waters characteristic of FNP sites (Appl's. testimony, p. 6; Staff's testimony, p. 2; Tr. 3235-36, 3255).

145. The plant is designed to withstand impact equivalent to a ship of 3,500 tons (approximately 260 feet long) striking at a speed of 13 knots. This would be an extremely high speed to occur with the breakwater (Staff's testimony, p. 3; Tr. 3365). A larger vessel colliding directly with the plant could cause unacceptable damage. Therefore, site protective features, such as an impenetrable breakwater, are required (OPS Ex. 21, Table 2.1-1; Staff's testimony, p. 3). Protective barriers can be designed to prevent large ships from colliding with the plant. Collisions with the protective structure, in themselves, will not result in releases beyond the limits set by 10 CFR Part 100 (OPS Ex. 21, Sec. 2A.2).

146. A large amount of flammable liquid spilled near the plant might ignite and endanger the plant. Such a spill could result from a tanker colliding with the breakwater. Protective features must be provided at the plant site to prevent such an event, when the probability exceeds allowable limits. The plant's external fire protection system must be capable of extinguishing a burning spill within 100 feet from the plant. A falling-water-film system will protect exterior plant walls from radiant heat (up to

30,000 BTU per hour per square foot). Site protective features must ensure that a spill outside the site structure will be kept at least 100 feet away from the plant (OPS Ex. 21, Sec. 9.5.1.2; SER, Secs. 2.10.2 and 9.5.1, fol. Tr. 1043; Appl's. testimony, p. 3).

147. Category I structures of the FNP will withstand explosions which produce reflected overpressures up to 2 psi (OPS Ex. 21, Sec. 2.9.2). A suitable site must have very low (less than 10^{-7} per year) probability of more severe overpressures; such explosions could result from a vapor-air explosion in an empty fuel tank. Protective features of the site might include a barrier to insure adequate separation from some petroleum carrier. Special steps may be required to protect against service vessels (see below). To avoid damage from an accident involving larger petroleum carriers, a site must be selected where the probability of occurrence is very low. Such sites are available (OPS Ex. 21, Sec. 2A.5.5, Appl's testimony, p. 5).

148. A shipping accident involving a chemical carrier might release a cloud of toxic vapor in the plant vicinity. The plant is designed to accommodate certain concentrations of toxic gases at the ventilation intakes and still maintain control room habitability (Appl's. testimony, p. 4; OPS Ex. 21, Table 2.9-1). These limits were determined as indicated in Regulatory Guide 1.78. Concentrations in excess of these limits must have very low probability of occurrence at the plant site if the site is to be considered suitable (Appl's. testimony, p. 5). Analyses of hazardous cargo traffic indicate that suitable sites exist (OPS Ex. 21, Sec. 2.A.7).

149. Service ships in close proximity to the FNP are the most likely to collide with the plant, and might cause many of the accident types considered above. Therefore vessels within the basin must be limited in size and speed so that potential impacts will be less than the plant can withstand (OPS Ex. 21, Sec. 2A.8.1; Appl's. testimony, p. 3; SER, Sec. 2.10.2, fol. Tr. 1043). The plant has external fire-fighting systems capable of extinguishing liquid-fuel fires within 100 feet, and capable of withstanding the heat from more distant fires. Explosion of a fuel-air mixture in the tank of a service vessel could damage the plant. Procedures required to protect the plant include: (a) inerting the fuel barge tanks during off loading; or (b) maintaining sufficient separation between the plant and fuel supply barge; or (c) limiting volume of individual tanks on the fuel supply barge (OPS Ex. 21, Sec. 2A.8.3; Appl's. testimony, p. 4; SER, Supp. 1, Sec. 2.10.2, fol. Tr. 1043).

J. Contention X - Ice Containment

ACCCE Contention 7:

"The refrigerated ice containment structure is innovative and, therefore, should not be permitted without an adequate pre-licensing testing taking into account the effect of roll, pitch, and yaw present on a floating nuclear plant."²³

150. Ice condenser containment has been adopted in the design of several land-based nuclear plants by the Indiana and Michigan Electric Co. (D.C. Cook 1 & 2), Tennessee Valley Authority (Sequoyah Units 1 & 2, Watts Bar 1 & 2), and Duke Power Co. (McGuire Units 1 & 2, Catawba 1 & 2). Furthermore, two units using ice condenser containment are under construction in Japan and two in Finland (Appl's. testimony p. 2; Staff's testimony, pp. 1-2).

151. The design of the ice condenser system to be used in the FNP is based on a development program which began in 1965. This program consisted of comprehensive system testing as well as full scale static and dynamic structural testing of ice condenser components. Structural behavior of components was measured during static and dynamic testing and confirmed analytical predictions of their structural adequacy (Staff's testimony, p. 2; Appl's. testimony, pp. 1-2).

152. The FNP ice condenser is exposed to the same loading conditions as land based condensers in addition to the loads resulting from roll, pitch and yaw which are transmitted through motions of the floating platform (Appl's. testimony, p. 2).

153. The Applicant has committed to compare the motions in a land-based plant to those expected in a floating nuclear plant but the induced motions (and loads) at the location of the ice condenser and its components will not be precisely defined until the final design of the plant is completed. If motions in the floating nuclear plant should be unexpectedly more severe, Applicant has committed to conduct additional tests to determine the actual retention capability of the ice baskets (Staff's testimony, p. 4).

154. In the unlikely event that design motions and/or loads should exceed those for which adequate ice retention has been shown, Staff believes that modification of the ice loading procedures and equipment

²³ Applicant's written testimony, OPS Ex. 42, was sponsored by Dr. Dee Walker, and Messrs. P. B. Haga, Richard Orr and John Sutherland (Professional Qualifications fol. Tr. 1024, 1039 and 6004). Staff's written testimony (fol. Tr. 6085) was sponsored by William Milstead, Jr. (Professional Qualifications fol. Tr. 6083). ACCCE did not present witnesses.

and/or the structural response of the ice condenser components is feasible (Staff's testimony, p. 4).

155. Modifications, such as altering the size of the flake ice particles, altering the flow rate and/or temperature of the ice transport system, or changes in the structural stiffness of ice condenser support structures, will make further testing necessary in order to demonstrate adequate ice retention under simulated design basis motions. Such changes are within the state of the art and could be made in the FNP during the course of manufacture. Applicant has committed to conduct such a test program if necessary (Staff's testimony, p. 5).

156. To assure that the ice condenser can perform its safety function, a monitoring program will be established to determine that all components operate properly (Tr. 6055-6065).

K. Contentlon XI - Turbine-Generator Matters

157. On June 15, 1976, Mr. Ernst J. Effenberger made a limited appearance statement before the Board expressing concern about safety matters related to the design of the turbine generator proposed for the FNP (Tr. 999-1010). The Board requested that the Applicant and Staff address this concern (Tr. 1011).²⁴

²⁴ Applicant's written testimony, OPS Ex. 38, was sponsored by Drs. Dee Walker and Douglas Shaffer and Messrs. P. B. Haga, John Hanst, John Dickinson, Harold Kirsteen and Francis Maszk (Professional Qualifications fol. Tr. 1024, 2881, 3419, 5091, 5093 and 5094). On August 15, 1977, Applicant submitted three affidavits providing additional information requested by the Board. Additional written testimony, OPS Ex. 68, was sponsored by Drs. Walker, Shaffer, and Ridge Seth, and by Messrs. Haga and Richard Orr (Professional Qualifications of Dr. Seth and Mr. Orr respectively fol. Tr. 7599 and 1329).

The Staff's written testimony (fol. Tr. 5660) was sponsored by Drs. K. M. Campe and John O'Brien and Messrs. Ronald Naventi, Richard Kiessel, Stefan Pawlicki and Ralph Birkel (Professional Qualifications fol. Tr. 5658, 2534, 5658, 1946, 5658 and 1038). On Nov. 21, 1977, Dr. O'Brien submitted an affidavit, and on March 10, 1978 Mr. Kiessel submitted an affidavit. The Staff also presented updated testimony (fol. Tr. 7620) sponsored by Drs. O'Brien and Campe, and Mr. Owen Rothberg (Professional Qualifications of Mr. Rothberg fol. Tr. 7620).

Mr. Effenberger's limited appearance statement was withdrawn (Tr. 4016, 4033), but was resubmitted as ACCCE's written testimony (fol. Tr. 4069) as sponsored by Mr. Effenberger. Also, Mr. Effenberger read into the record additional direct testimony on behalf of ACCCE (Tr. 4021-4026) (Professional Qualifications fol. Tr. 4069). Atlantic County's written testimony (fol. Tr. 4343) was sponsored by Dr. George Luchak (Professional Qualifications fol. Tr. 4336).

Turbine Rotor Problems

158. Mr. Effenberger made the following allegations relating to rotor deflections and stresses:

"A standard land based T-G rotor is well over designed. The rotor stresses are in the range of 8 to 10 times the safety factor (sic), because the bearing diameter usually dictates the other dimensions of the rotor. The manufacturer of the FNP turbine assumes a $\pm \frac{1}{2}$ inch deflection allowance in the operation of the turbine rotors. This in turn will increase the bending stresses in the rotor to an extent where the safety factors in certain areas will be reduced to less than two, which will increase the probability of a rotor failure in the same ratio" (Effenberger's testimony, fol. Tr. 4069, p. 3).

"Reducing the stress safety factors in the shaft from 8 to 10 down to below 2 is increasing the possibility of a shaft failure and a missile generation" (Ibid. at p. 8).

"There is no comparison between a land based T-G and a floating T-G. A land based unit is erected and operated on its natural 'sagging line'. The slightest deviation from this line will cause an unrest of the rotor which will show up in excess vibration until the misalignment is corrected. Every T-G in the world operates that way. No other situation is known" (Ibid., p. 2).

"The increase in disc stresses due to plant motions are discussed, but what about rotor stresses? Since the plant motions are not kept away from the turbine shaft, the rotor will go through its own cyclic stresses, plus all the plant motions."

"To illustrate the plant motions, a wave motion period of 20 seconds is assumed. Over a forty year life span, the rotor will experience over 60 million additional stress cycles. This fact is totally ignored" (Effenberger's testimony, p. 4).

"Hull vibrations will add to rotor strains and stresses and increase rotor failures and therefore missile generations" (Ibid., p. 8).

159. Westinghouse Electric Corporation is the designer and supplier of the FNP turbine generator. Its criterion for rotor design, developed after many years of experience, is that the stress safety factor be no less than 2. The final design of the FNP turbine rotor will meet this criterion (Appl's. testimony, pp. 3-4, Tr. 5429 and Appl's. Affidavit I, pp. 45-46 and 48). Conservative assumptions made by Applicant in the analysis of the turbine rotor will contribute to safety margin and will increase the fatigue life of the shaft (Tr. 5932).

160. Analyses of rotors for land-based turbine generator units similar in design to that proposed for the FNP show that, while there are locations where the ratio of allowable to actual stress is in the range of 8 to 10, there are also locations where the ratio is in the range of 2 to 3 (Appl's testimony, p. 3 and Appl's Affidavit I, pp. 46 and 48).

161. It is normal for turbine generators to operate away from the natural "sagging line", including movement back and forth across the "sagging line" (Appl's testimony, p. 5; Tr. 5195, 5443, 5446, 5756-57). Such deflections do not cause problems unless they become excessive. Experience and analysis have shown that deflections expected in turbine-generators such as those to be used in the FNP will not result in unacceptable vibrations (Appl's testimony, p. 5; Tr. 5757).

162. An analysis of plant motion on rotor stresses shows that platform motions contribute a maximum of about 17 per cent of the total cyclic stress in the rotor. In the analysis more than 30 billion stress cycles were assumed to have been imposed on the rotor. The effect of plant motion on rotor stress was not ignored (Appl's testimony, p. 6).

163. Analyses were conducted to determine the dynamic response of the turbine-generator and support system to an unbalanced rotating mass. These analyses were performed for the turbine-generator on the FNP (spring mounted) support as well as for the turbine-generator on a typical reinforced concrete support. It was demonstrated that the dynamic response of the turbine-generator is not adversely affected by the spring mounted support. Therefore, the dynamic behavior of the turbine support will not add to the probability of turbine missile generation (Appl's Affidavit I, pp. 12-16, and 47).

164. The Applicant has committed to a series of tests on the first unit at the turbine and barge manufacturing sites and at the operating site. These tests must demonstrate that the limiting values of shaft deflection vibration and bearing pressure have not been exceeded. The Staff will require that all testing that is possible to be performed at the turbine and barge manufacturing sites be performed there. Should deficiencies arise during the test program, the Applicant has committed to correct them (Staff's testimony, p. 24).

Turbine Failure and Missile Generation

165. Mr. Effenberger made the following allegation relating to turbine-generator material and the probabilities of damage by turbine missiles.

"NRC, Bush Report 4/7-1973, Probability of T-G Missiles. This report does collect data on a worldwide basis of T-G failures. Not

a single floating T-G is included, just information on land based units. Therefore, this report is totally unacceptable for an evaluation" (Effenberger's testimony, p. 2).

"The conclusion in the Bush Report shows that a probable failure of a T-G is in the range of 10^{-4} . To be on the safe side, the NRC assumed a 10^{-7} failure rate on new land based nuclear power plants is sufficient to guarantee the safety of the public. Ignoring the fact that the operation and environmental conditions of a floating nuclear power plant is totally different from land based plants, this requirement was also imposed on the FNP. The FNP was and is evaluated as any other land based power plant and this is wrong and dangerous, because the probability of a T-G failure on the FNP is greater than on a land based plant" (Ibid., pp. 2 and 3).

"Missile generation depends on the reliability of fail-safe equipment, like an overspeed protective trip system, reliability of valve system, rotor failures - material integrity, disc failures - material integrity, valve testing, just to mention a few. The orientation of the T-G in a power plant should be decided considering all the above conditions" (Ibid., p. 3).

"The NRC in its wisdom decided in a last year's ruling to locate the main T-G radial to the containment in any future nuclear power plants. The main reason was the probability of turbine missiles hitting the containment and all the shortcomings discussed earlier. The rest of the world has done this for many years, and this makes sense. A special exception was made for Offshore Power Systems. Why? Since the probabilities of turbine failures on a FNP are greater than on land-based plants, it is an absolute necessity, for our protection to relocate the most dangerous equipment and largest missile producer, so as to reduce the probability of missiles" (Ibid., pp. 5 and 6).

"If the T-G should go on the destructive overspeed then the largest piece ejecting the turbine casing will have a kinetic energy of 32 million ft. lbs. There is nothing on the present FNP which could contain or stop these missiles which in turn would penetrate all the structures, the shield building, the containment and the reactor vessel itself and in addition would puncture the hull and sink the plant. What happens then, I will leave to your imagination" (Ibid., p. 1).

"The T-G manufacturer claims that no T-G failure in his design has occurred. I would like to point out that Shippingport, a nuclear power plant, failed at operating speed last year, not at

design or destructive overspeed; it just fell apart after sixteen years of normal operation. Obviously the integrity of the material is only good for a limited time, definitely not for forty years as this FNP is planned to operate" (Ibid., pp. 4 and 5).

166. A witness for Intervenor Board of Chosen Freeholders of Atlantic County made several allegations concerning inappropriate use, by Applicant or Staff, of data in turbine missile analyses. These data are contained in the Bush report²⁵ relating to failures resulting from turbine age and size. It was alleged (a) that turbine failure rate over the 40 year design life of the FNP cannot be estimated using the Bush report (Luchak testimony, p. 2), (b) that a data point relevant to the variation of failure rate with time was omitted (Tr. 5058-5040), (c) that the application of the Bush data to large turbines like those in the FNP is questionable (Luchak testimony, p. 2) and (d) that the Bush data did not include test pit turbine failures (Luchak testimony, p. 3).

167. During cross-examination, Dr. Luchak stated that he was not an expert on scaling of turbine size and, contrary to allegations in his written testimony, that increased stresses and decreased safety factors do not always result from increases in the physical size of turbines (Tr. 4520, 4522) and that test failures were included in the Bush data (Tr. 4801-07).

168. The Bush Report treated a number of turbines, more than 50% of which were 20 years or older, and is thus useful in estimating turbine failure rates for the FNP (Tr. 4716, 5164 and 5165). The data point alleged by Intervenor's witness to be missing was, in fact, included (Tr. 5171-5176).

169. No credible evidence has been offered which supports the allegation that the probability of a turbine missile producing event is different for land-based nuclear power plants than for FNPs. The annual probability of turbine missile generation at design over-speed was evaluated at 10^{-4} , based on the Bush Report.

170. Requirements for protection from missiles resulting from equipment failure are given in 10 CFR Part 50, Appendix A (Staff's testimony, p. 41). Alternate methods of providing protection are given in Regulatory Guide 1.115. Selected turbine orientation, or evaluation of missile strike probabilities to demonstrate that they are sufficiently low are acceptable means of meeting these requirements (Staff's testimony, p. 42).

171. Turbine missile protection is adequate if the probability for unacceptable consequences, defined in 10 CFR Part 100, is found to be of the order of 10^{-7} per year. This standard is independent of whether the plant is

²⁵ Bush, S. H. "Probability of Damage to Nuclear Components to Turbine Failure", *Nuclear Safety*, Vol. 14, No. 3 (1973); also see *Nuclear Safety*, Vol. 19, No. 6 (1978).

land-based or floating (Appl's. testimony, pp. 16 and 17; Staff's testimony, pp. 2, 10 and 11; Tr. 5869-5872).

172. The FNP has an offset turbine orientation. The Applicant provided in OPS Ex. 103 an example of the barriers that intervene between the turbine and safety related equipment. The exhibit illustrates the material and material thicknesses for barriers that intervene between the turbine and the reactor vessel and the turbine and Safeguards Area No. 2. These barriers adequately protect against missiles generated at design overspeeds (See also Staff's testimony, pp. 1, 34).

173. The probability that a missile, once generated, would strike an essential safety system was computed to be 10^{-5} . Combining this value with the probability of missile generation yielded an overall annual probability of the order of 10^{-7} for a missile, generated at design overspeed, striking an essential safety system (OPS Ex. 21, Sec. 3.5.4.3.3, and Appl's. testimony, p. 17).

174. For high-trajectory design overspeed missiles, the strike and damage probabilities are bounded by those for the destructive overspeed scenario (Staff's testimony, p. 34; Staff's updated testimony, fol. Tr. 7620, pp. 2, 4-5).

175. The Applicant used a fault tree analysis to evaluate destructive overspeed turbine missile probability. The annual probability of reaching destructive overspeed was calculated to be on the order of 10^{-7} for the FNP (OPS Ex. 21, § 3.5.4.4.2).

176. The Staff also evaluated destructive overspeed turbine missile probability using an approach which differed from that of the Applicant. A realistic value of 4×10^{-6} /year was obtained and a conservative value of 4×10^{-5} /year was obtained for the probability (Staff's testimony pp. 10, 36; Tr. 5707, 5708 and 5827).

177. High trajectory turbine missiles were found to be a small contributor to the overall risk from destructive overspeed turbine missiles. The overall annual probability of damage from a destructive overspeed missile is in the range of 10^{-6} (for the conservative case) to 10^{-7} (for the realistic case) and meets the Staff criteria (Staff testimony pp. 10-11).

178. Tests conducted by the Electric Power Research Institute (EPRI) indicated that turbine missile exit speeds could be higher than previously calculated (Staff updated testimony, fol. Tr. 7620, p. 2). The Ballistics Research Laboratory formula for penetration of steel targets, which the Staff used, failed to accurately predict the EPRI test results. Since the Staff no longer had confidence in the BRL formula for missile exit velocities (Tr. 7625), it reevaluated strike and damage probabilities based upon conservative missile exits speeds from the turbine casing. The Staff did not take credit for the 4.5 inch steel missile shield through which a low

trajectory missile must penetrate to reach any target. For high trajectory missiles, the Staff's analysis was based upon the speed of a disc segment as it leaves the rotor, with no consideration given for shielding provided by the turbine internals and casing. Therefore, the Staff's analysis used the highest exit speed that could be assumed to occur (Tr. 7639). This reevaluation indicated that the higher missile speeds will not affect Staff's earlier evaluation that turbine missile risks were acceptably small (Staff's updated testimony p. 2).

179. Discs failures at Shippingport were determined to result from cracks formed and slowly propagated during 16 years of plant operation. Modern disc materials to be used in the FNP turbine exhibit more than twice the toughness of the material used for the Shippingport turbine (Appl's. testimony, p. 11 and Staff's testimony, p. 30). Unlike the Shippingport turbine, the FNP turbine will be inspected at intervals to assure that cracks do not grow to critical size which may lead to turbine failure (Appl's. additional testimony, OPS Ex. 68, pp. 3, 5).

180. The FNP turbine must meet design, material toughness and quality assurance provisions of Standard Review Plan 10.2.3 "Turbine Disk Integrity" (Staff testimony, p. 30). Reanalysis of the FNP turbine is planned in the final design phase (Appl's. additional testimony, OPS Ex. 68, p. 4).

Condenser Vacuum Load

181. Mr. Effenberger made the following allegation relating to condenser vacuum loads:

"It is impossible to compensate light loads such as vacuum loads by selective alignment. In a conventional design the condenser is fixed, the turbine is on the foundation and between the turbine and condenser is a flexible expansion joint. The full vacuum load is on the turbine. The only way to eliminate the vacuum load is to mount the condenser on springs and eliminate the expansion joint. This arrangement works on a land based plant, not on a floating nuclear power plant, because there is no way to restrain the hanging condenser, which is also exposed to the platform motions" (Effenberger's testimony, p. 7).

182. A vacuum balanced condenser will be used on the FNP to reduce the vacuum load on the turbine generator. The FNP design does not involve mounting the condenser on springs or eliminating the expansion joint (Appl's. testimony, p. 8; Tr. 5636).

Bearings

183. Mr. Effenberger made the following allegations relating to the FNP turbine rotor bearings:

"Changing the bearing pressure during operation will induce vibration and increase the possibility of a shaft failure and missile generation" (Effenberger's testimony, p. 8).

"The journal bearings of a turbine rotor are very precise. The weight of the rotor dictates the size of the bearing, the thickness of the oil film and the oil pressure. The gap between the bearing and the shaft is filled with oil and well defined. If this gap is too large, the phenomena of an oil whip shows up. If the gap is too small, then the oil will be over-heated and the babbitt in the bearing melts. The limitations between these two conditions are very small.

"Any bending of a turbine shaft during operation will change the gap in the bearing, will change the bearing pressure and will cause all the conditions as discussed above" (Ibid., pp. 6 and 7).

184. The turbine rotor bearing pressures have been evaluated under FNP loading conditions. This evaluation considered potential for oil whip and bearing overload (Appl's. testimony, p. 9).

185. Oil whip is a vibration of the rotor in a sleeve bearing that is caused by instability of the oil film. Analyses of the FNP bearings under the range of bearing pressures expected indicate that oil whip will not occur (Id.).

186. The FNP will contain redundant temperature sensors that will indicate if overheating occurs and thereby allow time to take corrective action. In the extreme case, if the babbitt in a bearing were to melt, the turbine would decelerate because of frictional forces and the probability of missile generation would be reduced (Appl's. testimony, pp. 9-10; Tr. 5456).

Valves

187. Mr. Effenberger made the following allegations relating to steam valves and the overspeed protection systems.

"Three overspeed protection systems are provided in this design, but all systems act finally on the same valve spindle, so no matter how many systems are installed for overspeed protection, if the one valve gets stuck then there is little protection and the reasoning for having three systems is not valid."

"The trip systems are part hydraulic and part mechanical. This means that the valves are spring loaded and the springs are kept open by hydraulic pressure. On impulse, the fluid is dumped and the springs are closing the valves. Two systems have the same drain line and any bending or plug-up of this line will make the main steam valves inoperable" (Effenberger's testimony, pp. 3 and 4).

"It has not been investigated what the platform motion could do to a valve spindle clearance. The steam chest which houses the main steam valves is also exposed to the platform motions" (Ibid., p. 5).

"Turbine main steam valve stems build up deposits no matter how the feedwater is treated. Practice has shown that even valve testing is not practical because the schedule is never kept by the operator. Only those who have worked in and maintained a power plant know that. If every stuck valve would be reported by the utility industry, the insurance rates would go up to the extent that we would have no power stations in operation" (Ibid., p. 4).

"Every valve testing makes it necessary to reduce the load of the turbine to the point where the valve can be taken out of service to close. Having twenty main steam valves and numerous non-return valves on a 1200 Megawatt Unit, the time element involved will be such that the unit will never get above 75-80% of full load. This means that the utility owner will resist, and if necessary will come up with his own schedule for valve testing. This will further increase the probability of a valve failure and create a potential possibility for any overspeed condition" (Ibid., p. 5).

188. The three overspeed protection systems for the FNP turbine are described in OPS Ex. 21, Sec. 10.2.2.4, pp. 10.2-6b, 6c, and 6d. These systems are designated Electrical, Mechanical and SCOTS (Single Channel Overspeed Trip System). Further description of the overspeed protection systems was provided in Applicant's Ex. 104 and in the testimony of Applicant's witness (Tr. 5107-5114). The SCOTS system is not innovative and has been utilized on land-based nuclear plants (Tr. 5893-5894). The overspeed protection system will conform to requirements of IEEE-279, 1971 (Tr. 5929). This requirement relates to periodic in-service testing and equipment qualification (SER, Sec. 7.6.1, fol. Tr. 1043). The turbine system contains redundant valves for the main steam piping and the reheat piping. Two valves in series in each steam flow path are included to protect the turbine from overspeed. These valves are held open against a spring force by fluid pressure so that a loss of fluid pressure will cause

these valves to close. Blockage of one drain line will not prevent valve closure (Appl's. testimony, p. 12; Staff's testimony, pp. 11-12, 17).

189. Applicant's analysis of the main steam valves and steam chest shows that they withstand accelerations approximately ten times greater than expected due to plant motion (Appl's. testimony, p. 13).

190. Valve design features will be used by the Applicant to minimize the chance that valves will stick open (OPS Ex. 21, Sec. 3.5.4.4.2; Appl's. testimony, p. 4 and Staff's testimony, p. 16). Furthermore, the particulate content of the steam flow through the valves will be reduced to minimize valve sticking (OPS Ex. 21, Sec. 10.3.5, and Staff's testimony, p. 16). The Commission will require an owner of an FNP to include in its Technical Specifications the valve testing and in-service inspection program outlined in OPS Ex. 21, 10.2.6. (Staff's testimony, p. 13). Interference with normal plant operation caused by valve testing will be minimized by scheduling such tests at off-peak hours and by staggering the tests, so that weekly valve testing may reduce the capacity factor by only about one-half of one per cent (Appl's. testimony, p. 14, Tr. 5982, 5983, 5989 and 5990).

L. Contention XII - Effect on Biota

ACCCE Contention 3a:

"Applicant has not given adequate consideration to adverse effects on the aquatic biota from the thermal plume, from radioactive liquid discharges, and from entrainment and impingement."²⁶

191. This contention was initially directed only to normal plant operations (Tr. 7276); however, subsequent developments (Sec Fdgs. 43-46 *supra*) led us to also consider more serious accidents.

192. During normal plant operations the thermal plume, radioactive discharges, entrainment and impingement can adversely affect marine biota. The nature and extent of these effects were considered by Applicant and by the Staff (OPS Ex. 57, Sec. 5.2; and OPS Ex. 59, Sec. F; Staff Ex. 1, Sec. 6).

193. Thermal stress on marine biota can cause physiological and behavioral changes or it can cause death. But only a small area of the

²⁶ Applicant witnesses (Drs. D. H. Walker, J. A. Nutant, T. Philbin, G. Lauer and J. Edinger) were examined by the Board (Professional Qualifications fol. Tr. 1024, 609, 7266, 7023 and 6986, respectively). Staff witnesses (Drs. R. McLean, R. Codell, L. Eckerman and H. Berkson and Messrs. C. Haupt, H. Bauman, G. L. Chipman and A. R. Marchese) were examined by the Board (Professional Qualifications fol. Tr. 7034, 7365, 7365, 7365, 7011, 7016, 7415 and 7415). ACCCE did not present witnesses.

water-body will be warmed enough to induce mortality - an area about the size of the FNP hull. Swimming organisms will tend to avoid areas that are too warm; others will be carried away by the velocity of the plume. Lesser thermal effects can occur over a wider area, but the affected zone remains relatively small, and close to the discharge. The changes should not adversely affect community structure or dynamics (Staff Ex. 1, Secs. 6.2, 6.3). No changes were foreseen along the shore (OPS Ex. 57, Sec. 5.2.4; Staff Ex. 1, Sec. 6.6). A sudden cut-off of the thermal plume would have limited effect on the marine biota (Staff Ex. 1, Sec. 6.7).

194. In no case have biota been shown sensitive to radiation exposures at the levels anticipated around the FNP during normal operation (OPS Ex. 57, Sec. 5.4; Staff Ex. 1, Sec. 6.9.1).

195. However, in the unlikely event of an accident more serious than any design-basis accidents, radiation exposures to aqueous organisms might be much greater. The levels of such exposures have been estimated, and the effects of this radiation estimated by comparison with known effects of radiation exposure on various types of aqueous populations (Staff Ex. 4, Sec. 5.2). In a worst-case accident, mortalities might occur but only in a limited area. In any such event, mortalities should not significantly affect populations, and recovery of the ecosystem seems assured (Ibid., p. 6-36).

196. How well fish succeed in escaping impingement by water currents around the intake depends on how well they swim. The velocity at the intake will be less than 0.3 meters per second (0.6 knots). Most fish can swim faster than that, so most should be able to escape impingement (OPS Ex. 57, Secs. 5.2.2., 5.2.3). However, fish are attracted to marine structures like the FNP and its breakwater; impingement of some fish could be a problem and must be examined on a site specific basis (Staff Ex. 1, Sec. 6.4).

197. Plankton entrained in the cooling water will pass through the system in about 1 minute. During that period they suffer rapid pressure changes, abrasion, exposure to biocides and a temperature increase of up to 10°C. Phytoplankton may withstand such abuse more successfully than zooplankton, but entrainment effects are best calculated on the assumption of 100% mortality for both groups (Staff Ex. 1, Sec. 6.3.1).

198. The fraction of plankton entrained and the ecological consequences of their loss will depend on site specific factors. Reasonable assumptions suggest 0-2% loss of a given planktonic species drifting past a plant, but higher values are possible. As much as 2% of a fisheries' stock might conceivably be lost by entrainment of fish larvae. The actual extent of these effects must be carefully considered on the basis of the site selected. Sites probably exist where the adverse impact of the plant would be acceptable. (Staff Ex. 1, Sec. 6).

M. Contention XIII - Discharge Outfall

ACCCE Contention 3b:

"Applicant has not given adequate consideration to the functional design of the discharge outfall."²⁷

199. The discharge outfall disperses the heated cooling water from the condenser. This outfall must be designed by the owner, taking into consideration the characteristics of the site chosen for the plant (Appl's. testimony, p. 1).

200. A generic evaluation of discharge outfalls and their characteristics was performed by the Applicant and by the Staff. Expected dilutions for different types of submerged and surface single port discharges and multiport discharges were calculated. A wide variety of designs appear to be suitable. (Appl's testimony, p. 2); (Staff's testimony, pp. 2-3).

201. The possibility of re-entrainment and recirculation of discharged cooling water is minimized by using a near-bottom discharge well removed from the shallower intake. Tidal currents and the natural longshore drift further reduce the prospects for recirculation (Appl's. testimony, p. 2).

202. For an FNP sited offshore, temperature rise from the thermal plume should be less than 1.0°C at the shoreline. The natural daily change in water temperature along the coastal regions of the Atlantic and Gulf Coasts in some locations can be up to 5°C (Appl's. testimony, p. 3). Offshore thermal variations will be less than the natural daily thermal fluctuations at most coastal locations (Appl's. testimony, p. 4).

203. The cooling system for a shoreline-sited FNP is indistinguishable from the system for a land-based plant at the same site. The design of a discharge outfall for a shoreline FNP would follow the existing state-of-the-art (Staff's testimony, p. 3).

N. Contention XIV - Food Chain

ACCCE Contention 3c:

"Applicant has not given adequate consideration to the cumulative effects of radioactive substances ingested along the food chain from plankton through humans."²⁸

²⁷ Applicant's written testimony, OPS Ex. 47, was sponsored by Dr. John Nutant, Mr. P. Blair Haga and Dr. John Edinger (Professional Qualifications fol. Tr. 609, 1024 and 6986). The Staff's written testimony (fol. Tr. 7018) was sponsored by Howard F. Bauman (Professional Qualifications fol. Tr. 7016). ACCCE did not present witnesses.

²⁸ Applicant's witnesses (Drs. D. H. Walker, J. A. Nutant, T. Philbin, G. Lauer and J. Edinger) orally testified and were examined by the Board at transcript pages 7274-7362

(CONTINUED)

204. This contention was interpreted to include both planned and unplanned releases of radioactivity (Tr. 7277). During normal operation a small, predictable amount of radioactive material escapes from the plant. Both the Applicant and the Staff have considered the biological effects of these releases (OPS Ex. 57, Sec. 5; OPS Ex. 65; Staff Ex. 1, Sec. 6.9).

205. Radioactivity normally released into the environment may concentrate along the food chain and represent a hazard to humans eating seafood. The cumulative effects of such food chain effects were estimated on the basis of annual average daily ingestion of fish and invertebrates. These are all assumed to be in equilibrium with radionuclides in the plant discharge mixing zone. Using these conservative assumptions the maximally exposed individual received an organ dose of 0.15 mrem per year to the thyroid gland. The whole body and gastrointestinal track received smaller doses. All of these exposures represent a small fraction of the natural background radiation which is about 100 mrem per year, and all exposures would be well below limits set by 10 CFR Part 20 (OPS Ex. 57, Sec. 5, p. 5-52; Staff Ex. 1., Sec. 6.9.2.2.).

206. Both Applicant and Staff also made extensive studies on the effects of radioisotopes that might be released during an accident into the waters surrounding a FNP. These studies again included consideration of the effects of such radioactivities in the food chain from plankton to humans (OPS Ex. 65; Staff Exs. 3, 4).

207. Releases that might occur during the spectrum of design basis accidents, as defined in NRC Regulatory Guide 4.2, were investigated. The doses resulting from such accidents present only very small risks (OPS Ex. 63; Staff Ex. 4, Sec. 7.2).

208. Substantial consideration was also given to accidents beyond the design basis (for reasons described in fdgs. 43-46, *supra*). As before, this consideration included the effects of ingestion into the food chain from plankton to humans (OPS Ex. 65, Staff Exs. 3, 4).

209. Essential safety features on an FNP largely resemble a land-based plant and the probability of a major (Class 9) accident is approximately the same as for a land-based plant (Staff Ex. 3, Sec. 2.2.3.2). If a core melt were to occur, gaseous fission products might well escape into the atmosphere. The probability of such release is about the same as for a land-based plant of similar design (ice-condenser) (Staff Ex. 4, p. vi; OPS

(Professional Qualifications fol. Tr. 1024, 609, 7266, 7023 and 6986). The Staff's written testimony responding to certain questions in the Board's letter of March 29, 1979, (fol. 7413, 7416) was sponsored by Drs. R. McLean, R. Codell, K. Eckerman, and H. Berkson and by Messrs. C. Haupt, H. Bauman, G. L. Chipman and A. R. Marchese (Professional Qualifications fol. Tr. 7034, 7365, 7011, 7016, 7415), and these witnesses were examined by the Board. ACCCE's attorney did not attend these hearing sessions.

Ex. 65, pp. 7-4, A-5). The consequences of such a release would also be similar to a land-based accident (Staff Ex. 3, p. 3-14; Tr. 7350-2), and would have little or no effect upon the food chain (Staff Ex. 4, App. E, p. E-2).

210. A core melt might lead to a release of molten core debris through the bottom of the FNP platform and into the waters below. The consequences of such a release are quite different from those of a similar land-based accident. The immediate threat would be to persons in the vicinity of the plant. This has been considered, in part, under Contention VII-Radiological Impact on Swimmers and Boaters, *supra*. This immediate threat would be substantially reduced if the release of core melt products to the environment could be delayed (Staff Ex. 3). A core ladle appears capable of ensuring such delays (See Fdg. 50, *supra*).

211. Should core melt products escape into the environment the consequences are difficult to predict with assurance. A variety of uncertainties complicate the evaluation. Among these are: (1) the actual amount of molten core that would escape and the timing (OPS Ex. 65, App. A; Staff Ex. 4, App. A-2); (2) the degree to which the core materials will be subdivided as they come to rest, the area of surface exposed to surrounding waters and the leach rate of fission products from the core debris (OPS Ex. 65 App. B; Staff Ex. 4, App. A.3; Tr. 7440-7450); (3) the extent of interaction between various radioactive materials and the marine sediments (Tr. 7281-2, 7301-7320; Staff testimony fol. Tr. 7416; Tr. 7455-66); and (4) the amount of sump waters that might escape (Staff Ex. 4, Sec. 7.3.2.3 and Appendix A-2.4; OPS Ex. 65, App. E, Tr. 7422-7436). Both Staff and Applicant made conservative (pessimistic) estimates regarding these uncertainties, but differed somewhat in the degree of conservatism (*e.g.* 7449-50; Staff Ex. 3, p. 3-6; OPS Ex. 65, p. 6-36).

212. The methodology developed in WASH-1400 was followed in these risk assessments, but the data from that study were used principally for comparative analysis, and generally supported the qualitative conclusions in this case (Staff testimony dated 7/13/79, fol. Tr. 7416, p. 5; Tr. 7278-79, 7417-21).

213. For accidents involving a release of core melt debris from an offshore plant, no interaction was considered to occur between sediments and radioactivities leached from the melt or released with sump water (Staff Ex. 4, p. 4-13).

214. In the absence of any interdiction, the maximum exposure was achieved by a fish-eater catching an entire year's supply of fish by following and fishing from the worst point in the plume at the worst time. These fish were assumed to live on a diet that was in immediate equilibrium with the released radioactive substance. Such an improbable exposure

would result in dose of 530 rad. Finfish dominate the exposure because of lower bio-accumulation of cesium in shellfish; cesium isotopes dominate the exposures (Staff Ex. 4, p. 6-29). In riverine and estuarine environments exposure to an individual harvesting and consuming fish and shellfish daily was estimated to be 300 and 220 rem respectively (Ibid.).

215. Adopting somewhat more reasonable assumptions, the Staff found that a core-melt accident would most likely not result in prompt fatalities (Staff Ex. 4, p. 6-36).

216. However, the population exposure through liquid pathways from a core melt accident is likely to be significant and would probably be much greater (perhaps tenfold) in the case of an FNP than in the case of a land-based accident (Staff Ex. 4, p. 6-36).

217. Most likely pathways lead to consequences of the same order as the air pathway consequences, except the liquid pathway consequences in estuaries may be even worse (Staff Ex. 3, p. 3-14 and Sec. 4-3). Population exposures of from 10^5 person-rem to over 10^7 person-rem might occur (Staff Ex. 4, Table 7.3.1). Because of the large uncertainties and the fact that mitigative efforts were not included, these figures must be interpreted with great caution (Staff Ex. 3, p. 3-6).

218. With the potential for large population doses, interdiction of the radiological consequences must be considered (Staff Ex. 4, Sec. 7.3.3; and App. E; Appl. Ex. 65, Sec. 8.3).

219. Interdiction can be accomplished at the source, or along the pathway to the potentially exposed population. Source interdiction methods might include: sinking the platform on top of the debris; closing the basin openings; walling off the core debris with sheet pilings; or burying the debris in chemically absorbent materials such as clay minerals (OPS Ex. 65, Sec. 8.3.1). Dose pathway interdiction could include: a prohibition on fishing within 5-10 miles of the plant; subsequent monitoring and tracking of the plume to exclude fishing and other activities; later, monitoring fish sold for consumption; control of access to exposed beaches; shoreline clean-ups; and drinking water monitoring (for fresh-water sites) (OPS Ex. 65, Secs. 8.3.2 and 8.3.3).

220. Interdiction could be highly effective in reducing exposures with effectiveness increasing directly with the level of effort (Staff Ex. 4, p. 6-36).

221. Cost-benefit analysis shows the FNP concept comparable to some land-based plants. (Staff Ex. 3, Sec. 4.4). Because this is a new concept, accurate comparison is difficult and depends to a considerable extent upon the degree of conservatism adopted in estimating various effects. (Staff Ex. 3, Sec. 4.3; Tr. 7280).

O. Contention XV - Dredging

ACCCE Contention 3f:

"Applicant has not given adequate consideration to the impact on the aquatic biota that will be caused by dredging within the breakwater and near its perimeter."²⁹

222. This contention is interpreted to include only maintenance dredging since it assumes the existence of a breakwater. Consequences of maintenance dredging would be much less than the consequences of construction dredging (Staff's testimony, p. 2). Both Applicant and Staff have considered the general consequences (OPS Ex. 57, Sec. 4.3.1, pp. 4-7 to 4-11 and Sec. 5.7, p. 5-81; Staff Ex. 1, Sec. 5.4.1.3, pp. 5-9 to 5-12; Sec. 6.11.2.2, p. 6-81; and Sec. 11.3, pp. 11-4 and 11-5), although actual consequences will depend upon specific features of the plant site.

223. Dredging is the owner's responsibility and must be done to maintain the location within site envelope parameters. Dredging within the breakwater would be undertaken only when significant sedimentation occurs. The dominant parameters that will affect the amount of sediment deposited within the breakwater include the location of the FNP, the amount and type of suspended solids, entrances to the basin and the height of the entrance sills, the volumetric flow of cooling water, and the circulation pattern within and immediately outside the basin (Appl's. testimony, pp. 1-2).

224. Effects on plankton and fish will for the most part be temporary and quite localized (Staff's testimony, pp. 4-6). Applicant has assumed a total loss of benthos within the breakwater (Appl's. testimony, p. 2) and the consequences of that total loss are included in the cost-benefit analysis (Staff Ex. 1, pp. 5-24, 11-4 and 11-5). This loss is comparatively insignificant because of the limited area involved (Appl's. testimony, p. 2).

225. Dredging around the outer perimeter of the breakwater would involve about the same total area as inside the breakwater. Again the consequences would be comparatively insignificant (Appl's. testimony, p. 2).

226. Disposal of dredged materials must be done in compliance with applicable local, state and federal regulations (Appl's. testimony, p. 2).

²⁹ The Applicant's written testimony, OPS Ex. 48, was sponsored by Dr. John Nutant, Mr. P. Blair Haga, and Dr. Gerald J. Lauer (Professional Qualifications fol. Tr. 609, 1024 and 7023). The Staff's written testimony (fol. Tr. 7037) was sponsored by Dr. Richard B. McLean and Dr. S. Marshall Adams (Professional Qualifications fol. Tr. 7034 and 7035). ACCCE did not present witnesses.

P. Contention XVI - Impact on Resort Economics

Atlantic County Contention 1:

"Fears of a nuclear accident can have impact on resort economics by frightening vacation and leisure seekers from going to resort areas in proximity to floating nuclear generating stations. This contention does not contest whether these fears might be technically justified but is limited to the effects of these fears, justified or not, on the resort communities."³⁰

227. Applicant conducted investigations to determine the impact of the presence of nuclear reactors on the resort-oriented economy of coastal communities located near operating nuclear plants (Appl's. testimony, p. 1).

228. On a quantitative basis, Applicant investigated the impact of three coastal commercial nuclear power plants upon certain nearby resort-oriented communities.³¹ With regard to Boston Edison Company's Pilgrim Nuclear Power Station and Northeast Utilities' Millstone Nuclear Power Station, Applicant reviewed and relied upon a 1975-76 Oak Ridge National Laboratory study of the socioeconomic effects of operating reactors on two communities.³² Pilgrim Unit 1, which is located near Plymouth, Massachusetts and is about 35 miles south of Boston, began commercial operation in June 1972, and Unit 2, at the time testimony was presented, was undergoing licensing for a construction permit. Millstone, Units 1 and 2, located near Waterford, Connecticut, respectively began commercial operations in December 1970 and October 1975 (Appl's. testimony, pp. 2-3). With respect to Jersey Central Power and Light Company's Oyster Creek Plant, which began commercial operation in 1969 and is located in Ocean County, New Jersey, about 35 miles from Atlantic City, Applicant

³⁰ Applicant's written testimony, OPS Ex. 44, was sponsored by Dr. John A. Nutant and Messrs. P. Blair Haga, K. T. Mao and Dr. Dennis S. Mileti (Professional Qualifications fol. Tr. 609, 1024, 6230 and 6232, respectively). The Staff's written testimony (fol. Tr. 6715) was sponsored by Louis M. Bykoski, and Drs. Donald P. Cleary, Earl J. Baker and Steven G. West; and "Impact of Offshore Nuclear Generating Stations on Recreational Behavior at Adjacent Coastal Sites" (NUREG-0394, published in 1977) by E. J. Baker, D. J. Moss, S. G. West and J. K. Weyant was incorporated as their testimony (fol. Tr. 6715) (Professional Qualifications of Drs. Baker, West and Cleary fol. Tr. 6707. Professional Qualifications of Mr. Bykoski fol. Tr. 6710). The Staff subsequently filed updated testimony (fol. Tr. 7537) which was sponsored by Dr. Cleary and by Mr. Clarence R. Hickey.

Atlantic County's written testimony was sponsored by Dr. Marshall E. Levine (fol. Tr. 6814) (Professional Qualifications fol. Tr. 6808).

³¹ A quantitative study is one which contains documented statistics, while a qualitative study reflects undocumented statistics (Tr. 6263-64).

³² "Socioeconomic Effects of Operating Reactors on Two Host Communities: A Case Study of Pilgrim and Millstone", Elizabeth Peele (1977) (Appl's. testimony, pp. 2, 11).

reviewed and relied upon demographic data relating to nearby communities. Oyster Creek is immediately adjacent to Forked River Nuclear Power Station, which, at the time of the hearing, was under construction (Appl's. testimony pp. 5-6, Tables 1 and 2).

229. The Oak Ridge National Laboratory Study concluded that: (Appl's. testimony, p. 5).

Tourism is little affected by the presence of the nuclear power plant in either community. In Plymouth, tourists now visit the plant along with their visits to historic sites in the community.

230. Demographic data discloses (a) that Ocean County leads all other New Jersey counties in population growth and posted the largest migration of people into the area between 1970 and 1975, and (b) that Lacey and Ocean Townships, wherein the Oyster Creek plant is situated, have experienced sustained growth between 1950 and 1975. Relying upon this data, Applicant witnesses concluded that such population growth is an indication of growth in tourism in a resort economy (Tr. 1613-14, 6318-19). We accord no weight to the conclusion derived from this data. Applicant's witnesses testified that they had neither tested the relationship between population growth and growth of tourism against any sample communities nor conducted any general test to determine whether population acts as an indication of growth of tourism (Tr. 6672-74).

231. On a qualitative basis, Applicant also conducted investigations of other coastal resort communities in proximity to several coastal nuclear power plants - Florida Power and Light Company's Turkey Point Plant, Units 3 and 4 (commercial operation began 1972-73), Maine Yankee Atomic Power Company's Maine Yankee Plant (commercial operation 1972), and Southern California Edison Company's San Onofre Plant, Unit 1 (commercial operation 1968). In no case was there any indication that the economy, especially the tourist economy, of nearby communities was adversely affected (Appl's. testimony, pp. 7-8).

232. In addition, Applicant conducted an investigation to determine the impact of nuclear weapons testing at the Nevada Test Site on the resort economy of Las Vegas. It deemed that the situation in Las Vegas is analogous to other resort communities when considering whether the presence of nearby nuclear operations will adversely impact tourism (Appl's. testimony, p. 1; Tr. 6356, 6410, 6416-17). We give no weight to Applicant's conclusion that, because the resort economy of Las Vegas had flourished despite the proximity of the nuclear weapons testing site, it follows that the presence of operating nuclear power plants in proximity to coastal resort communities would not adversely affect the resort-oriented economy of such communities. In the first place, the actual testing of the nuclear weapons occurs 75 to 85 miles away from Las Vegas (Tr. 6245).

These distances contrast markedly with the distances between the coastal reactors, which have been used as examples by Applicant, *supra*, and by the Staff (Staff's testimony, pp. 10-32), and the resort communities near which they are located. Second, all tests of nuclear devices were previously announced and closely monitored with regard to meteorological conditions. Thus, in our view, the public's fear of the possibility of an unscheduled, randomly occurring release of radioactivity due to an accident at an operating nuclear generating plant could well differ significantly from any public apprehension arising from an announced and closely monitored testing of a nuclear device at a great distance.

233. In the spring of 1976 the Staff undertook an investigation to determine if any changes in usage of water-oriented recreational facilities could be attributed to the existence of a nearby operating nuclear power plant. Ten locations having water-oriented recreational facilities used by tourists were selected for analysis.³³ Between five and thirteen government (local, state and federal) officials and representatives of local businesses were interviewed at each location. These individuals were chosen because of their knowledge of local tourism and recreational activities. The interview was structured: to develop information on recreation and tourism activity and trends in the vicinity of the plant; to draw out information which might indicate impact, positive or negative, of the plant on tourism and recreation; and finally to elicit the respondents' personal opinion concerning plant impacts. This study was updated with followup interviews during May/June 1978 (Staff's testimony, pp. 8-10).

234. Numerous officials interviewed by the Staff at each of the ten plant locations said in the main that the nuclear plant(s) in their areas had no adverse impact on nearby tourism or recreational activity. In most cases there has been a continuing growth in summer population and tourism in these areas. Many officials interviewed by the Staff felt the nuclear plants' visitor's centers positively influenced local tourism. Cook and Maine Yankee, for instance, are advertised in local tourist pamphlets and officials credit them with drawing more visitors to the vicinity (Staff's testimony, pp. 10-32).

³³ The ten nuclear plant locations investigated by Staff were: Brunswick, Units 1 and 2, 2.5 miles north of Southport, North Carolina; Cook Units 1 and 2, 2 miles northeast of Bridgeman, Michigan; Haddam Neck, Unit 1, in Haddam, Connecticut; Indian Point, Units 1, 2 and 3, in Buchanan, New York; Maine Yankee, Unit 1, 4 miles south of Wiscasset, Maine; Millstone, Units 1 and 2, Waterford, Connecticut; St. Lucie, Units 1 and 2, 12 miles southeast of Fort Pierce, Florida; San Onofre, Unit 1, Camp Pendleton, California; Three Mile Island, Units 1 and 2, on Three Mile Island, Pennsylvania; Zion, Units 1 and 2, Zion, Illinois. (The environs of the Maine Yankee, Millstone, and San Onofre plants, as set forth *supra*, were also investigated by Applicant.

235. Further, the Staff contracted with the Florida State University for the services of Drs. Earl J. Baker and Stephen G. West, and a research team under their direction, to apply survey research techniques and theory, drawn from several areas of the behavioral sciences, to the question of potential tourist behavior in the vicinity of FNP's (Staff's testimony, p. 33). Using the estimates of net tourist avoidance developed by the Baker & West study (NUREG-0394, see n. 30, *supra*), the Staff computed the impact that an operating floating nuclear plant would have on the local economics of four resort areas.³⁴ These computations were made with the assistance of the regional economic and demographic forecasting capability of the U.S. Department of Commerce. Baseline economic forecasts were first adjusted to account for the contribution of plant operation to the local economy. This forecast was then adjusted to account for the loss in tourist activity. The net calculated impact on total earnings of each area from siting an FNP at the mid-point along each beach was found by the Staff to be less than one percent. Using what the Staff considers to be very conservative assumptions, the potential impact of a FNP on a local economy was found to be very small and well within the year to year fluctuations in local economic activity as well as within the band of measurement error (Staff's testimony, p. 64).

236. In updated testimony presented on December 4, 1981, the Staff analyzed the impact of the accident at Three Mile Island, Unit 2 (Updated testimony, fol. Tr. 7537). It found that recreational fishing activity on the Susquehanna River declined immediately after the accident but regained pre-accident levels within one year. Further, the Staff cited a study by the Commonwealth of Pennsylvania which found that the impact of the accident on tourism in south central Pennsylvania was small and short-lived, and that preliminary tourism figures for the 1980 tourist season showed a high level of tourism and no evidence of continuing Three Mile Island related impacts. While it did not undertake post-TMI 2 studies with regard to the other nine plant regions previously surveyed, the Staff concluded that the avoidance reaction in the vicinity of TMI 2 due to the accident would have been greater than that at the other plants because of the perception of more immediate threat to health (Updated testimony *passim*; Tr. 7542-43). The Staff testified that its conclusions reached in previous testimony with respect to this contention remain valid (Updated testimony, p. 6).

237. The Board of Chosen Freeholders of Atlantic County presented Dr. Marshall E. Levine as its witness. In 1977 he had utilized an

³⁴ These areas were: Bay County, Florida; Tampa-St. Petersburg, Florida; Atlantic County, New Jersey; and Barnstable County, Massachusetts.

advertisement, published in an effort to examine the fears held by county citizens concerning the proposed siting of a floating nuclear plant off the coast of Brigantine, New Jersey. We do not give any weight to Dr. Levine's survey because, first, he agreed that it lacked external validity³⁵ (Tr. 6857). He agreed his sample was biased because all members of the county did not read the newspaper and because the people who responded to the advertisement decided if they would be included or excluded from the study rather than being selected by him. Further, he did not know whether one person or a group sent in more than one response (Tr. 6858-61), and he agreed that the questions in his advertisement were definitely leading (Tr. 6873). Moreover, he agreed that he had not established internal validity for his study³⁶ (Tr. 6871). Finally, he could not state that his assumptions were true that long time regular vacationers and people from other communities, who are considering moving to or vacationing in Atlantic County, would go elsewhere (Tr. 6922).

Q. Contention XVII - Net Energy Yield, Cost-Benefit Balance

ACCCE Contention II:

"The FES Part II cost-benefit analysis underestimates the total direct and indirect cost of the FNP's and grossly overstates the benefits because of (1) the conclusion that FNP's will produce a net energy yield (positive), without regard to the energy impact if less than eight are constructed and sold or if the FNP's, due in part to the unique stresses of the alien marine environment, fail to operate for their planned useful life, (2) the failure to consider cost of decommissioning the breakwater as a potential cost, (3) the failure to compute the cost impact if the FNP's are required to use cooling towers at inshore sites, (4) the failure to consider the various direct and indirect costs resulting from the foreclosure of alternative uses of coastline, and because of (5) the fact that the costs were based upon 1972 costs whereas the benefits are 1988 benefits."³⁷

³⁵ External validity refers to the extent to which findings can be generalized beyond the particular people studied to a broader group of people. (Tr. 6851, 6967)

³⁶ Internal validity refers to the extent that a particular survey provides answers to that which the researcher wants to measure. If a study lacks internal validity, there is no basis to conclude that what the study is attempting to measure has, in fact, been measured (Tr. 6869-72; 6969-72).

³⁷ Applicant's written testimony, OPS Ex. 49, was sponsored by Dr. John Nutant, Messrs. P. Blair Haga, William F. Trappen and Thomas A. Mantia (Professional Qualifications fol. Tr.

(CONTINUED)

238. Both Applicant and Staff analyzed the net energy yield from the FNP. These analyses showed that over the lifetime of the plant (30 years at 70% of capacity) the plant would produce 15 times more energy (thermal) than would be required to build the Blount Island manufacturing facility, manufacture the materials, assemble them, fuel the plant and refuel it for 30 years. The most significant fraction of the total energy requirements is involved in refueling, so the plant's net energy production would first become positive after less than 4 months, even if only one FNP were ever built (Appl's. testimony, p. 2; Staff's testimony pp. 2-4; Staff Ex. 1, Sec. 12.10.4).

239. The stresses upon marine environment have been considered above (Contention III, Marine Environment, *supra*). In the event of overall decommissioning, one of three alternatives might be adopted for the breakwater: perpetual care; alternative use; or removal. The cost for complete removal was estimated at \$400 million (1978 dollars). Considering the potential value of the breakwater as an artificial reef for the ecological communities, even in the absence of the FNP and considering the cost of removal, that option seems most unlikely. Perpetual care would require upkeep on navigation lights and on the breakwater itself; such care might cost around \$500,000 per year (Staff testimony, pp. 6-12; Tr. 7118-7119).

240. Both the economic and environmental costs of providing closed-cycle cooling at an inshore site have been evaluated (Staff Ex. 1, Secs. 4.6 and 10.1.1, Table 10.1.7 at p. 10-16, as modified by Staff's testimony pp. 16-17, Table 11.2.2 at p. 11-3, Table 11.2.3 at p. 11-4 as modified by Staff's testimony, p. 24; FES II Final Addendum, fol. Tr. 7014, Secs. 2.2.2.2, 2.4.2 and 2.5.2). Capital costs of inshore FNP's with closed-cycle cooling are estimated to be less than offshore FNP's and comparable to the upper range of capital costs for land-based plants. Since the FNP is designed for once-through cooling, the use of cooling towers would either reduce plant efficiency or require more than the usual expense for the cooling towers. Effectively this would increase the capital costs by 5-15% (Staff's testimony pp. 13-17).

241. The cooling towers for an inshore FNP would be somewhat larger than for a coastal land-based plant, but the environmental consequences would be very similar. Salt spray from the towers would increase somewhat the "saline drift" in the area and would perhaps shift the local zonation of salt-tolerant and intolerant plants. Salt drift from the cooling

609, 1024, 7055 and 609. The Staff's written testimony (fol. Tr. 7110) was sponsored by Dr. Paul C. Fine and Messrs. Fred J. Clark, Norman E. Hinkle and Fred G. Taylor. Mr. Taylor was unavailable for the hearing and was represented by Dr. Glenn W. Suter (Professional Qualifications fol. Tr. 7060, 637, 637 and 7106). ACCCE did not present witnesses.

towers would be much less than the increased atmospheric salt that results during storms. Birds will collide with the towers and some will be killed. The extent of these losses will be highly site specific, but should closely resemble losses that would occur at the cooling tower of a land-based plant. Bird mortality rates would most likely be insignificant (Staff's testimony, pp. 19-21).

242. Both offshore and inshore FNP's would foreclose some alternative uses of the shoreline. Inshore plants have no more effect on land use than do land-based plants; offshore FNP's would have even less. Economic costs of foreclosing land-use would be less than 1% of the cost of the power station. Eight floating plants, sited in pairs, would foreclose the use of from 40 to 800 acres of coastal zone land and perhaps less than one mile of beach. Less than 0.1% of the remaining undeveloped coastline of the Atlantic and Gulf Coasts would be required (Staff Ex. 1, Secs. 9.4, 12.8.1; Staff's testimony, pp. 33-38). Potential land use conflicts are site dependent and could only be evaluated on a site-specific basis. However, the effects of such potential conflicts would not appear to be great (Appl's. testimony, p. 3).

243. Costs for a floating nuclear plant were calculated using a 1973 base cost. For the purposes of cost-benefit analysis these costs were then adjusted for escalating construction costs and for interest charges during construction to arrive at costs in "current" dollars at the onset of commercial operation. In two separate analyses the start-up dates were 1981 and 1985 respectively. Operating costs over the life of the plant were discounted back to the date of first commercial operation (Staff Ex. 1, Secs. 10.1, 11.2; Appl's. testimony, p. 4). Subsequently, the analysis was carried out for first operation in 1988 (Staff's testimony, p. 43). The principal benefit from a nuclear plant will be the value of additional electricity generated. This value will depend upon applicable rates and effective generating capacity. Employment, wages paid, taxes paid and the stimulation of regional development represent secondary benefits of a power plant (Staff Ex. 1, Secs. 11.1.1-11.1.4). Any cost-benefit analysis will be dependent upon the site of the plant and the economic conditions during its operation.

R. Contention XVIII - Special Energy Requirements

Board Retained Issue (Originally Brigantine Contention I. 4):

"Section 12.10.4 of Part II of the FES is inadequate in that it does not take into account the special energy requirements needed

to procure breakwater material, to construct the breakwater, to tow plants to the site and to provide shore to barge umbilicals.”³⁸

244. Special energy requirements needed to procure breakwater material, to construct the breakwater, to tow FNP's to an owner's site and to provide shore-to-barge umbilicals were calculated based on the two-unit breakwater design (Staff Ex. 1, Sec. 3.1).

245. Using reasonable or conservatively high assumptions the energy requirements were estimated as:

quarrying stone	0.28	trillion	BTU
transporting stone	0.6	"	"
manufacturing cement	1.7	"	"
constructing breakwater	0.7	"	"
towing 2 plants	0.16	"	"
plant-to-shore circuits	2.4	"	"
<hr/>			
Total energy for two plants	5.8	"	"

This represents about 0.3% of the expected lifetime energy output of the FNP (Appl's. testimony, pp. 2-4; Staff's testimony, pp. 2-6; Tr. 7065; Tr. 7091).

S. Board Question - Heat Pumps and Secondary and Tertiary Recovery of Oil

Board Question:

“To what extent, if any, would the consideration of the utilization of heat pumps and of secondary and tertiary recovery from oil wells serve to modify the discussions and/or conclusions reached in Part II of the FES?”³⁹

246. Heat pumps are electrically driven devices used to provide space heating or space cooling. They are used in new construction or as a

³⁸ The Applicant's written testimony, OPS Ex. 50, was sponsored by Dr. John A. Nutant, Messrs. P. Blair Haga, Thomas A. Mantia, and William F. Trappen (Professional Qualifications fol. Tr. 609, 1024, 609 and 7055). The Staff's written testimony (fol. Tr. 7062 was sponsored by Dr. Paul C. Fine and Mr. Clifford A. Haupt (Professional Qualifications fol. Tr. 7060 and 7011, respectively.) None of the intervenors presented witnesses upon this issue retained by the Board nor did they cross-examine.

³⁹ Applicant's written testimony, OPS Ex. 51, was sponsored by Dr. John Nutant and Mr. P. Blair Haga (Professional Qualifications fol. Tr. 609 and 1024). The Staff's written testimony (fol. Tr. 7133) was sponsored by Norman Hinkle (Professional Qualifications fol. Tr. 637). None of the Intervenor's presented witnesses or cross-examined.

replacement to existing heating systems, particularly in moderate climates. A heat pump provides little or no heat at temperatures below -18°C . (0°F). If all homes now heated electrically were converted to heat pumps the effect on overall electric power consumption would be small. If new houses or homes now using fossil fuel heating and no air conditioning were to install heat pumps, the electrical usage would increase (Appl's. testimony, pp. 1-3; Staff's testimony, pp. 5-6).

247. Since 1970, annual domestic production from existing oil fields has fallen each year, with almost half of the demand made up by imported oil in some years. Since the total U.S. domestic production of oil by all methods of recovery is estimated to meet only about half of the demand in 1985, secondary and tertiary methods of recovery of oil are expected only to maintain overall domestic production levels, not to reduce requirements for imported oil. Future domestic oil supplies will not be adequate to meet projected growth in demand for electric energy (Appl's. testimony, pp. 4-5; Staff's testimony, p. 4).

CONCLUSIONS OF LAW

The Board makes the following Conclusions of Law based upon the entire record and all the evidence in this proceeding, including our consideration and evaluation of: the Application for Manufacturing License and supporting documents submitted by Applicant; the Staff's Safety Evaluation Report, as supplemented, and Final Environmental Statement, Parts I, II and III; the written and oral testimony of all of the witnesses; the exhibits admitted into evidence; the Atomic Energy Act of 1954, as amended; the National Environmental Policy Act, as amended; the Rules and Regulations of the Commission; and relevant NRC decisions and case law.

In accordance with the provisions of 10 CFR Part 50, Appendix M, paragraph 2, the Board finds that the Application for a Manufacturing License meets all applicable requirements of 50.34(a)(1)-(9) and 50.34a(a) and (b). Any required information or analysis relating to site matters is predicated on postulated site parameters which are specified in the Application. Further, the Application includes information pertaining to design features of the proposed reactors that affect plans for coping with emergencies in the operation of the reactors.

In accordance with the provisions of 10 CFR Part 51 and 10 CFR Part 50, Appendix M, paragraph 3, the Board finds that the Applicant has submitted with its Application an Environmental Report as required of applicants for construction permits. This report is directed to the manufac-

ture of reactors at the Blount Island manufacturing site and, in general terms, to the construction and operation of the reactors at hypothetical sites having characteristics that fall within the postulated site parameters. The related draft and final detailed statements of environmental considerations prepared by the Commission's Regulatory Staff are similarly directed.

In accordance with the provisions of 10 CFR Part 50, Appendix M, paragraph 4, the Applicant has complied with the requirements of 10 CFR Part 50, Appendices E and H to the extent that the requirements in these appendices involve facility design features.

In accordance with the provisions of 10 CFR Part 50, Appendix M, paragraph 5:

(a) The Applicant has described the proposed design of, and the site parameters postulated for, the reactors, including, but not limited to, the principal architectural and engineering criteria for the design, and has identified the major features or components incorporated therein for the protection of the health and safety of the public;

(b) Such further technical or design information as may be required to complete the Applicant's design report and which can reasonably be left for later consideration, will be supplied in a supplement to the design report;

(c) Safety features or components which require research and development have been described by the Applicant and the Applicant has identified, and there will be conducted a research and development program reasonably designed to resolve safety questions associated with such features or components; and

(d) On the basis of the foregoing, there is reasonable assurance that (i) such safety questions will be satisfactorily resolved before any of the proposed nuclear power reactors are removed from the manufacturing site and (ii) taking into consideration the site criteria contained in 10 CFR Part 100, the proposed reactors can be constructed and operated at sites having characteristics that fall within the site parameters postulated for the design of the reactors without undue risk to the health and safety of the public.

The Applicant is technically qualified to design and manufacture the proposed reactors.

The Applicant is financially qualified to design and manufacture the proposed reactors.

The issuance of a license for manufacture of the proposed reactors will not be inimical to the common defense and security or to the health and safety of the public.

The applicable requirements of Section 102 (2) of NEPA, 10 CFR Part 51 (formerly 10 CFR Part 50, Appendix D) and 10 CFR Part 50, Appendix M, have been complied with in this proceeding. In particular, the Board has independently considered the benefits and costs of the proposed reactor manufacture and concludes that the benefits to be derived from such manufacture outweigh the costs.

The Board finds on the basis of the evaluations and analyses of the environmental effects of the proposed action required by 10 CFR Part 51 and 10 CFR Part 50, Appendix M, paragraph 3, that the action called for is the issuance of the manufacturing license.

The Board concludes that the Commission should issue a manufacturing license to Offshore Power Systems authorizing the manufacture by the end of 1999 of eight standardized floating nuclear plants at its manufacturing facility located on Blount Island in Jacksonville, Florida.

ORDER

1. On the basis of this Initial Decision, and pursuant to the Atomic Energy Act of 1954, as amended, and the Commission's rules and regulations, the Director of Nuclear Reactor Regulation is authorized to issue a manufacturing license to Offshore Power Systems for the manufacturing by the end of 1999 of eight standardized floating nuclear plants at its manufacturing facility located on Blount Island in Jacksonville, Florida.

2. Pursuant to the Commission's final rule (47 Fed. Reg. 2286, January 15, 1982), amending 10 CFR §50.34(f), the OPS manufacturing license shall contain the following condition:

"The licensee shall perform within two years after issuance of this license an evaluation of alternative hydrogen control systems that provide, with reasonable assurance, that:

1(a) Uniformly distributed hydrogen concentrations in the containment do not exceed 10% during and following an accident that releases an equivalent amount of hydrogen as would be generated from a 100% fuel-clad metal-water reaction; or that the post-accident atmosphere will not support hydrogen combustion.

(b) Combustible concentrations of hydrogen will not collect in areas where unintended combustion or detonation could cause loss of containment integrity or loss of appropriate mitigating features.

(c) Equipment necessary for achieving and maintaining safe shutdown of the plant and maintaining containment integrity will

perform its safety function during and after being exposed to the environmental conditions attendant with the release of hydrogen generated by the equivalent of a 100% fuel-clad metal-water reaction including the environmental conditions created by activation of the hydrogen control system.

(d) Inadvertent actuation of a post-accident inerting system can be safely accommodated during plant operation.

The evaluation shall as a minimum include consideration of a hydrogen ignition system and a post-accident inerting system. The evaluation shall include:

(a) A comparison of costs and benefits of the alternative systems considered.

(b) For the selected system, analyses and test data to verify compliance with the requirements of 1(a), 1(b), 1(c), and 1(d) of this condition.

(c) For the selected system, preliminary design descriptions of equipment, function, and layout.”

3. In accordance with 10 CFR §§2.760, 2.762, and 2.785, this Initial Decision 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. Exceptions to this Initial Decision may be filed within ten (10) days after the service thereof. 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.

IT IS SO ORDERED

THE ATOMIC SAFETY AND
LICENSING BOARD

George A. Ferguson
ADMINISTRATIVE JUDGE

David R. Schink
ADMINISTRATIVE JUDGE

Sheldon J. Wolfe, Chairman
ADMINISTRATIVE JUDGE

Dated at Bethesda, Maryland
this 30th day of June, 1982.

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)

June 30, 1982

The Licensing Board overrules certain objections to its prehearing conference order and certifies certain questions concerning specificity of contentions to the Appeal Board.

MEMORANDUM AND ORDER
(Overruling Certain Objections to Prehearing Conference Order
and Referring Certain Questions to the Appeal Board)

Introduction

In our Order of March 5, 1982 (LBP-82-16, 15 NRC 566), the Board ruled on some fifty contentions that were the subject of the initial prehearing conference. Pursuant to 10 CFR 2.715a, the Applicants, the Staff and Intervenor, Palmetto Alliance (Palmetto) and Carolina Environmental Study Group (CESG), have filed objections seeking reconsideration of various of these rulings, or, in the alternative, referral of some of them to the Appeal Board. The Applicants and the Staff raise multiple and similar objections concerning certain Board rulings on specificity of contentions. We deal with those objections in this Order. We will address the Applicants' other objections, the objections of the Intervenor, and certain related questions in a separate Order to be issued shortly.

A. Specificity of Contentions and Available Information.

1. **Introduction.** The Applicants and Staff reassert their arguments that *all* contentions must be put forward with "reasonable specificity" before the initial prehearing conference despite the fact that information necessary for the formulation of intelligent contentions in some areas is not yet available. They further argue that when new documentary information does become available, such as in emergency plans, any contentions based upon it must then be considered for admission under the multiple criteria for late contentions in 10 CFR 2.714(a)(1).

We rejected these arguments in our March 5 Order. Upon consideration of the objections from the Applicants and the Staff, we adhere to our prior rulings on this subject. We have already stated our reasons for those rulings in some detail and believe that that discussion adequately covers many of the arguments now raised on reconsideration. We will address only those points which warrant some further comment.

2. Applicants and Staff Objections.

(a) **Case Law.** We noted in our March 5 Order that certain cases cited by the Applicants and Staff, particularly *Koshkonong* and *BPI v. AEC*, were not "focused on the situation that concerns us here." Order at 8. We then pointed to several other cases which we saw as broadly illustrative of a Licensing Board's authority to admit a vague contention conditionally, subject to later specification when the necessary documentation becomes available.

Both the Applicants and the Staff have responded with detailed analyses of these and some related cases in efforts to demonstrate the correctness of their position. Applicants' Motion at 12-28; Staff Objections at 6-10. It seems safe to assume that every NRC adjudicatory decision having even a remote bearing on these matters has now been brought to our attention. These analyses only serve to reinforce our conclusion that the case law provides no clear answers to these questions. About all one can say with confidence is that neither the Commission nor the Appeal Board has ever taken a clearly articulated position on them.

(b) **Filing Contentions on Non-existent Emergency Plans.** In our Order of March 5, we said that the unreasonableness of the Applicants' and Staff's position was well illustrated in the emergency planning area, because the offsite emergency plans for Catawba are not yet available. We went on to point out some practical difficulties involved in attacking a plan that does not exist. LBP-82-16, 15 NRC 572-573. The Applicants nevertheless argue that "more than enough pertinent information is available to allow Intervenors to state their concerns in their contentions." Applicants'

Motion at 22. They seek to demonstrate that proposition by several examples.

The Applicants point first to the "Commission's regulations and regulatory guides which serve to inform Intervenors of the requirements which the plans must meet." But these tell an Intervenor nothing about how a particular local governmental entity will choose among alternative approaches to the abstract requirements.¹ While the applicable Staff document, the NUREG-0654 Criteria for Preparation of Radiological Emergency Plans, contains more detailed guidance, it still leaves much to the choice of local officials; moreover, emergency planning officials can depart from Staff documents because they do not have the force of law. *Matter of Southern California Edison Co.* (San Onofre Station), Initial Decision, LBP-82-39, 15 NRC 1191.

The Applicants point next to the "generic State plans for both North and South Carolina" which apparently are available and which "will comprise an important part of the offsite emergency plan." By its very nature, however, emergency planning requires a substantial degree of involvement of local officials. *See Matter of Southern California Edison Co.* (San Onofre Station), Initial Decision, LBP-82-39. Therefore, the availability of the State plans is no substitute for the local plans.

Finally, the Applicants point to the existing emergency plans for Duke's McGuire facility and for the South Carolina Electric & Gas Company's Summer facility. Just why these emergency plans for other facilities would be helpful to the Catawba Intervenors we are not told.² It is true that all three facilities are in the same general part of the country and that certain relevant factors, such as similarity of terrain, might suggest similar approaches to some planning problems. It also seems reasonable to assume that local planning officials in the emergency planning zone around Catawba would look for models in the plans already developed for nearby reactors like McGuire and Summer.

These considerations, however, do not give a Catawba Intervenor the kind of detailed information he needs concerning the still-to-be-drafted

¹ The basic emergency planning regulations are drafted in very general terms. *See* 10 CFR 50.47. The only specific requirements are that the plume exposure and ingestion pathway emergency planning zones be "about" 10 to 50 miles in radius. *Id.*, subsection (c)(2).

² There may be some confusion in the Applicants' minds about the basic emergency planning issue involved at the operating license stage. They say that the Intervenors should be required to specify "why they believe that adequate emergency plans for Catawba *cannot be prepared.*" (Emphasis added) Applicants' Motion at 24. Ensuring that effective emergency planning is possible, without looking at planning details, is the thrust of the construction permit inquiry. *See* Part 50, Appendix E, Part II. But at the operating license stage it must be shown that the details of particular plans meet the Commission's planning standards. *Id.*, Part IV; 10 CFR 50.47(b). The only way to make that determination, or to raise intelligent contentions that those standards are not met, is to study the plans themselves.

Catawba plans. Emergency plans are largely site-specific, focusing on the 10-mile plume emergency planning zone around the reactor. McGuire is about twenty-seven miles North North East of Catawba, and Catawba is about sixty miles North North East of Summer.³ Thus, emergency planning zones of "about 10 miles" (as prescribed by NRC rule) for these three facilities would not overlap; they would cover three entirely different areas. This means that each plan must be designed for different nearby populations, roadways, emergency facilities, and the like. For example, the largest community in the 10-mile zone around McGuire is Mt. Holly, North Carolina, population approximately 5000. The largest community in the 10-mile zone around Summer is Chapin, South Carolina, population 342. By contrast, the 10-mile zone around Catawba includes Rock Hill, South Carolina, population approximately 35,000. One of the most important problems that emergency planning officials in Rock Hill and York County will confront will be to devise a workable plan for the safe, rapid and complete evacuation of Rock Hill in the event of a serious nuclear accident at Catawba.⁴ It seems unlikely that the McGuire or Summer emergency plans would be of any relevance to that part of Catawba emergency planning.

If any further proof were needed that the Applicants' position is unsound, this portion of the Applicants' motion supplies it. The Staff does not even attempt to explain how an Intervenor can effectively state contentions about emergency plans he has never seen.

(c) **The 1978 Amendments to the Rule.** The Applicants and the Staff have brought to our attention a fragment of the "legislative history" of the pertinent rule which appears to favor their position and of which we were previously unaware. Prior to 1978, there was no explicit rule concerning contentions filed after the first prehearing conference. To the extent guidance existed, it came from case law. *Cf. Matter of Nuclear Fuel Services, Inc.* (West Valley Reprocessing Plant), CLI-75-4, 1 NRC 273 (1975) (concerning a late intervention petition). In 1978, a unanimous Commission adopted a number of changes in the rules of practice. Included in this package of amendments was one to require the filing of a "supplement" of contentions fifteen days before the first prehearing conference, and also to

³ These distances are based upon the operating license environmental report site descriptions for the three facilities and upon the Regional Station Map, Figure 2.1.1-1, of the Catawba ER.

⁴ 10 CFR 50.47(b)(10) requires a finding that a range of protective actions have been developed for the plume exposure pathway EPZ for emergency works and the public. The two most important protective actions are evacuation and sheltering. *See Matter of Southern California Edison Co.* (San Onofre Station), Initial Decision, LBP-82-39, 15 NRC 1228-1244.

allow additional time for filing the supplement upon a balancing of the five factors applicable to late intervention petitions. 10 CFR 2.714(b).

The "Supplementary Information" accompanying adoption of these amendments stated in relevant part as follows:

There is no provision in §2.714 which specifically addresses the matter of amending or expanding contentions after a petitioner has been admitted as a party. Yet contentions are frequently expanded or amended because of new information which comes to light after petitioners have been admitted, such as information in the Commission Staff's safety evaluation or environmental impact statements.

The Commission believes that §2.714 should be amended in the interest of clarifying the requirements in regard to . . . amending, expanding, and deleting contentions. . . . Section 2.714 is revised to specifically provide that late filed contentions (a contention or amended contention which is filed after 15 days prior to the special prehearing conference, or where there is no special prehearing conference, which is filed after 15 days prior to the first prehearing conference) will be considered for admission under the clarified criteria set forth in subparagraph (a)(1). 43 Fed. Reg. 17798, 17799.

These statements seem to weigh against our conclusion that contentions based on new information, if raised promptly after the information becomes available and otherwise satisfactory, are not to be tested against the criteria for late petitions and contentions. However, we do not believe that they are entitled to much weight in the circumstances of this case.

These statements do not address significant aspects and ramifications of the overall problem we are considering. For example, had the interpretations now urged by the Applicants and the Staff mirrored the Commission's intention, a candid statement of "Supplementary Information" should have included an explicit acknowledgment that the proponent of a "late" contention would be penalized for delay that is beyond his control. It might also have expressed the only apparent supporting rationale: in order to expedite proceedings, Intervenor must file their contentions before some relevant documents are written. But in the absence of such explanatory glosses in the Supplementary Information, that document does not reflect a clear intention by the Commission to adopt the Staff's and Applicants' interpretations of the rule. Indeed it is scarcely conceivable to us that a unanimous Nuclear Regulatory Commission might intentionally adopt a rule having such Draconian effects.

The circumstances surrounding adoption of this amendment reinforce the conclusion that the Commission probably did not focus on the issues

now before us. Proposed rule changes and accompanying statements of Supplementary Information are drafted by the Staff and sent to the Commission for review and approval. The amendment in question was one of a number of proposed minor technical and clarifying changes adopted in the rules of practice in 1978. The Commission did not hold a formal meeting to discuss these amendments; they were approved without discussion at a Commission affirmation session.⁵ The language of new section 2.714(b) and the quoted language from the Supplementary Information section were approved exactly as the Staff had written them. These circumstances show that the amendment in question was not controversial, and was probably not the subject of close Commission scrutiny. For if the Commission had been made aware of the implications that the Applicants and the Staff now find in the rule, there would at least have been extended discussion of those implications and a clearer expression of the Commission's intent.

(d) Significance of the Five Criteria for Late Filings.

Footnote 6 of the March 5 Order said that —

Section 2.714(a) erects five separate hurdles to "nontimely" contentions, only one of which (good cause) would presumably be surmounted by a showing of new information. In the main, these criteria are inappropriate for application to a contention that is "late" for reasons wholly beyond the intervenor's control. For example, the last criterion concerns the extent to which the contention will "broaden the issues or delay the proceeding." An issue based on new information will almost necessarily broaden the issues and it may well delay the proceeding. But the responsibility for those effects must be borne by the applicant or the Staff for producing a "late" informational document.

The Staff argues against our "apparent presumption that application of the late-filing provisions is unfair." Staff Objections at 12. The thrust of the following Staff discussion is that those provisions should not raise significant barriers to "late" contentions, particularly those based on new information. Citing two cases from Atomic Energy Commission days, the Staff tells us that "the Commission has interpreted this provision rather liberally where new matters have arisen after the initial pleadings."

⁵ Advice provided by the Office of the Secretary.

Ironically, the brief Staff paper transmitting the final rule to the Commission for approval (SECY-78-74) said that —

The amendments are intended to facilitate public participation in the NRC . . . hearing process.

The Applicants' and Staff's interpretation of the rule would not "facilitate" public participation in any sense. Quite the contrary. Their interpretation raises arbitrary obstacles to public participation.

It seems to us that the Staff is trying to have it both ways. On the one hand, they imply that the factors in the rule other than good cause will not in practice bar a late but "good" contention based on new information. Nevertheless, they insist that each of the five factors must be "balanced," that good cause is "only one factor to be considered." *Id.* at 13. If the factors other than good cause are not to be virtually read out of the rule, they represent, on their face at least, significant independent grounds for disallowing a contention. Some of the cases applying these criteria in detail tend to bear that out. *See Matter of Nuclear Fuel Services, supra*, at 275-276; *South Carolina Electric and Gas Co.* (Summer Station), ALAB-642, 13 NRC 881, 885-890 (1981); *Cincinnati Gas and Electric Co.* (Zimmer Station), LBP-79-22, 10 NRC 213, 214-217 (1979).⁶ We therefore adhere to the view that these factors are not applicable to contentions filed promptly after the subject documents first become available.

(e) **Other Points.** Several other points on this subject in the Applicants' or Staff's papers warrant brief comment.

Contrary to the Staff's statements, our rulings on specificity do not mean that "once the one contention necessary for intervention has been judged adequate, other nonspecific contentions may be admitted." Staff Objections at 5. This is demonstrated by our rulings against Palmetto Contention 20 and CSG Contentions 20 and 21, which we excluded for lack of specificity and because existing documents (the FSAR or ER) did provide a sufficient basis for framing a specific contention. The "one good contention" rule and our specificity rulings are unrelated.

In admitting certain somewhat vague contentions subject to the possibility that they might be made more specific following discovery, we applied "less stringent standards of specificity than we will apply at the final

⁶ It is difficult to assess the impact of the five criteria in practice because most Licensing Board rulings on late contentions have probably been in unpublished orders.

More recently, the Staff seems to have changed its position on this point. In its Response to Supplemental Statements of Contention dated June 22, 1982 in *Carolina Power & Light Co.* (Shearon Harris Plant) at p. 10, the Staff states its agreement with the Shearon Harris Applicants that —

new information in documents not currently available will constitute good cause for the filing of new contentions and, in such circumstances, that factor (i) will prevail over a balancing, as the regulation provides, with factors (ii) to (v) of 10 CFR §2.714(a)(1).

In other words, "late" contentions based on new information are to be automatically excused of their lateness. The Staff's *Shearon Harris* position exhibits a sensitivity to the equities of "late" contentions based on new information and a commendable new willingness to subordinate the literal language of the regulation to those equities. The only practical difference between the Staff's newly discovered position in *Shearon Harris* and the Board's position there is the availability of discovery, a matter we discuss in LBP-82-50, 15 NRC 1753-1754. If the Staff wishes to conform its position here to its *Shearon Harris* position, it should advise the Appeal Board.

prehearing conference." LBP-82-16, 15 NRC 575. The Staff is simply not correct in referring to "the Board's admissions of contentions it concedes do not meet the 10 CFR 2.714(b) specificity standard . . ." The question the Staff's statement begs is whether the same standard of specificity must apply under 2.714(b) at all stages of the proceeding. We think not, and we believe that a relatively lenient standard is appropriate at least for some contentions at this early stage of the proceedings. See *Southern California Edison Co.* (San Onofre Station), Partial Initial Decision, LBP-82-3, 15 NRC 61, 187 n.94 (1982). How else but through discovery is an intervenor going to find out, for example, about possible defects in equipment or lapses in quality assurance at a nuclear power plant? Such things will not be reported in the FSAR.

It is true that nonspecific contentions tend to exacerbate discovery problems, particularly by increasing the volume of interrogatories. But this is not the fault of the Intervenors for filing vague contentions. It is the fault of the other parties, or the system, for forcing Intervenors to plead without the necessary information. In any event, the discovery problems are manageable. Notwithstanding some vague contentions, the Board has devices to control discovery within reasonable bounds.

The Staff's objections contain no discussion of some of the factors we consider important and which we discussed at some length in our March 5 Order. The Staff's objections consist in the main of unduly literal interpretations of the rules and detailed discussion of past cases that provide no clear answers for this case. On important questions like those presented here, whether the literal language of the rules and the decided cases are not dispositive, the analysis should go further. What are the practical implications of requiring an Intervenor to plead contentions on a document that does not exist? How does such a requirement square with the Atomic Energy Act and NEPA? Is such a requirement fair to all interested parties? The Staff's papers are silent on these questions.

We note in conclusion that there should be an alternative approach to the problem of unavailable information when contentions are otherwise due before the first prehearing conference. Instead of allowing vague contentions subject to the condition of providing more specificity when the information is available, as we have done in this case, a board should have the option of deferring the due date for contentions about the relevant subject until, say, thirty days after the information is available. Of course, contentions filed by that time would not be subject to the late-filing criteria in section 2.714(a)(1). The only important practical difference in these two approaches would be the availability of discovery if a contention were admitted conditionally. In cases where there are serious time pressures, it may be preferable to go ahead with discovery on vague conten-

tions, with the difficulties that entails, rather than to wait months for relevant documents. Under a more leisurely schedule, it may be more efficient for all concerned to postpone all contention rulings until after pertinent documents are available. The choice between these approaches should be in the Licensing Board's discretion.

3. **Referral to the Appeal Board.** In the event that their objections are not sustained, both the Applicants and the Staff seek referral⁷ to the Appeal Board of the following rulings:

- (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.

Rulings may be referred where necessary "to prevent detriment to the public interest or unusual delay or expense." 10 CFR 2.730(f). *See Public Service Co. of Indiana* (Marble Hill), ALAB-405, 5 NRC 1190, 1192 (1977), and cases cited. In addition, the Commission has encouraged referrals "if a significant legal or policy question is presented." Statement of Policy on Conduct of Licensing Proceedings, 46 Fed. Reg. 28533, 28535. More specifically, referral may be appropriate where the rulings in question affect "the basic structure of the proceeding in a pervasive and unusual manner." *Houston Lighting and Power Co.* (Allens Creek Station), ALAB-635, 13 NRC 309, 310.

We believe that the issues involved here meet these standards. They concern not merely isolated rulings on particular contentions, but raise generic issues affecting most of the contentions thus far admitted into the

⁷ Both parties use the term "certify" rather than "refer." The rules appear to contemplate "certification" under 10 CFR 2.718(i) and 2.751a(d) where a board does not first decide the disputed question, and "referral" under 10 CFR 2.730(f) where the board first rules and then requests interlocutory review. Since we have ruled in this case, we are in a referral posture. Except for the fact that the rules and cases speak in these different terms, the distinction appears to be unimportant.

case. If the Board's rulings are ultimately determined after hearing and on appeal to be incorrect, very substantial delay and expense may have been unnecessarily incurred. Perhaps more significantly, these issues seem bound to affect the admission of contentions in other upcoming cases. At the present time, there is no clear guidance on these issues from the Appeal Board or the Commission.

The motions to refer rulings 1-3 as framed above to the Appeal Board pursuant to 10 CFR 2.730(f) and 2.751a(d) are granted. We will transmit to the Appeal Board copies of the documents listed in the margin to assist it in its deliberations.⁸

The provisions of our Order of May 25, 1982 (unpublished) concerning suspension of discovery shall remain in effect pending a further Order.

**THE ATOMIC SAFETY AND
LICENSING BOARD**

**James L. Kelley, Chairman
ADMINISTRATIVE JUDGE**

**Dr. A. Dixon Callihan
ADMINISTRATIVE JUDGE**

**Dr. Richard F. Foster
ADMINISTRATIVE JUDGE**

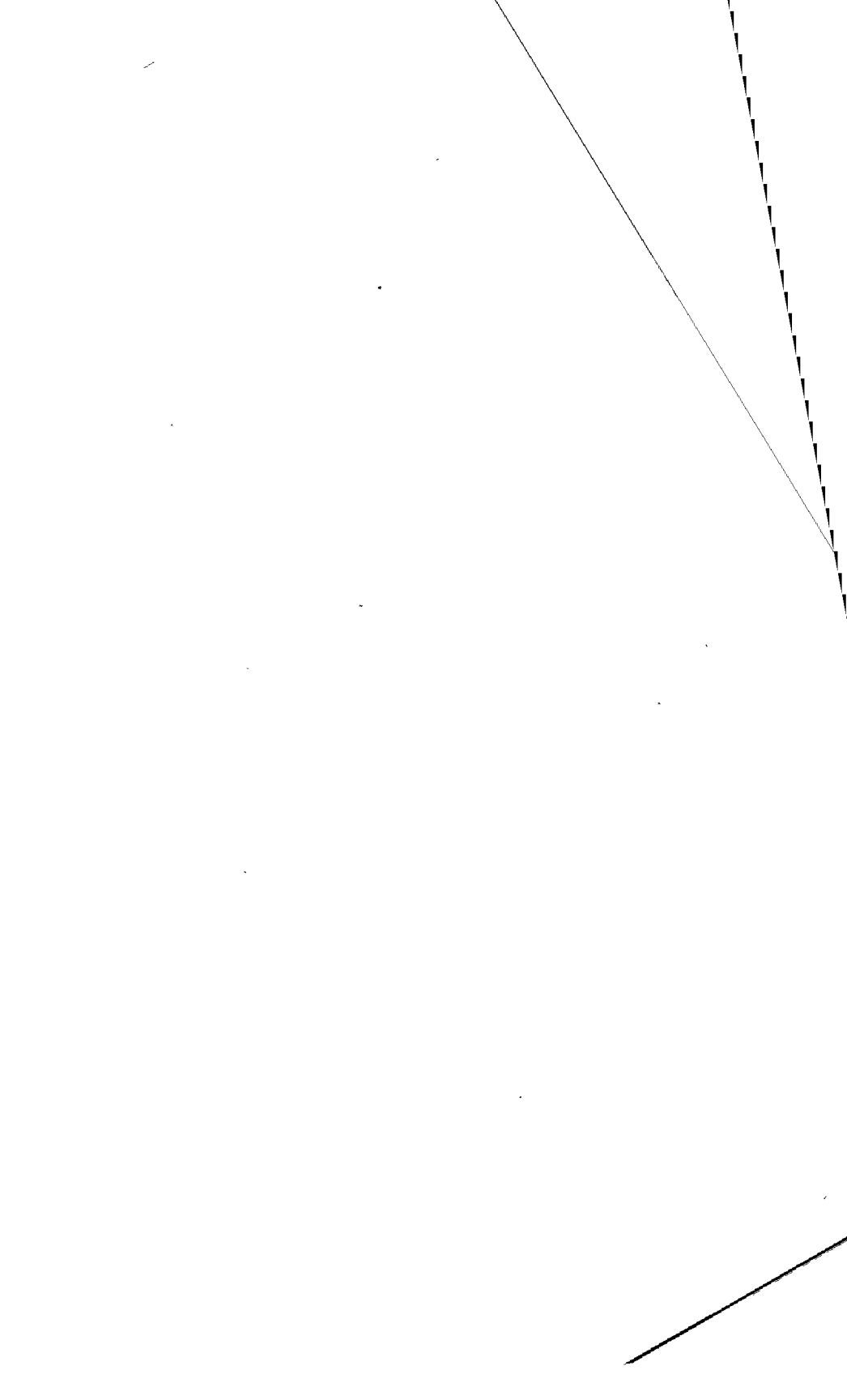
Dated at Bethesda, Maryland,
this 30th day of June, 1982.

⁸ Memorandum and Order (*Reflecting Decisions Made Following Prehearing Conference*), LBP-82-16, 15 NRC 566, dated March 5, 1982.

Applicants' Motion for Reconsideration or in the Alternative for Certification (unpublished), dated March 31, 1982.

NRC Staff's Objections to Licensing Board's March 5, 1982 Order on Admission of Contentions (unpublished), dated April 5, 1982.

NRC Staff's Response to Applicants' Motion for Certification of Certain Rulings in Licensing Board's Prehearing Conference Order (unpublished), dated April 20, 1982.



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF NUCLEAR REACTOR REGULATION

Harold R. Denton, Director

In the Matter of

**Docket No. 50-155
(10 CFR 2.206)**

**CONSUMERS POWER COMPANY
(Big Rock Point Plant)**

June 15, 1982

The Director of Nuclear Reactor Regulation denies a petition under 10 CFR 2.206 to suspend plant operations because of insufficient capacity in the spent fuel pool to allow complete defueling of the reactor.

DIRECTOR'S DECISION UNDER 10 CFR SECTION 2.206

By a petition sent in the form of a Mailgram on April 6, 1982 to the Commissioners of the Nuclear Regulatory Commission (the Commission or NRC), Ms. JoAnn Bier and Ms. Christa-Maria (Petitioners) requested to "intervene" in the startup of the Big Rock Point Plant until the "reactor core can be safely offloaded in the event of an emergency. . ." The petition has been treated under 10 CFR Section 2.206 of the Commission's regulations. It was referred to the NRC Staff for disposition on April 12, 1982.

I.

On April 10, 1982, prior to the Staff's receipt of the petition, the Big Rock Point facility started up after the 1982 refueling outage. The petition, which implicitly requested immediate action to prevent the startup, was consequently treated as a request to suspend continued plant operation.

The petition is based on the fact that the spent fuel pool at the Big Rock Point Plant does not have adequate capacity to allow complete offloading of the reactor fuel in the core. The Petitioners indicate four concerns which lead them to the conclusion that this situation presents a threat to public health and safety.

I have considered the concerns of the Petitioners and other relevant information bearing on the issues addressed in the petition. For the reasons set forth below, the Petitioners' request for suspension of operation of the Big Rock Point plant is denied.

II.

The lack of full core offload capacity at the Big Rock plant does not, in the view of the NRC Staff, present an unreasonable risk to public health and safety. The four enumerated concerns presented by the Petitioners to support the need for complete offloading capability of the reactor core involve factors of which the NRC staff is aware, and to which it gives ongoing attention. Based upon the following discussion, I conclude that these four concerns form no basis for suspension of operation:

1. Embrittlement of the reactor vessel due to neutron bombardment

The status of the embrittlement of the reactor vessel has been discussed in the NRC staff's Safety Evaluation Report (SER) dated April 2, 1982 supporting License Amendment 52 to the Big Rock Point license. A copy of this amendment is enclosed as Appendix A to this decision. In this amendment, the reactor vessel pressure-temperature limits were modified to account for embrittlement. The Safety Evaluation Report discusses the basis for those changes and concludes that there is an adequate margin of safety against vessel failure due to embrittlement.

2. Advanced age of reactor systems

The Technical Specifications that are a part of the facility license require that all systems important to reactor safety remain operable so that in the unlikely event that they are needed, they will be available. In order to assure their availability, routine surveillance and scheduled tests and inspections of important structures, systems and components are required by the NRC and carried out by the licensee. Should testing, surveillance or inspection indicate degradation below a safe level, action must be taken by the licensee to maintain the proper safety margins. Examples of such action include component replacement or plant shutdown.

3. Lack of a fuel transfer canal

Most nuclear power plants have a fuel transfer canal which provides a method of transferring fuel assemblies under water to and from the reactor

cavity and the spent fuel pool. This provides shielding for the operating personnel while fuel is being transferred. At Big Rock Point, a fuel transfer cask is used to transfer fuel assemblies between the reactor and the pool. The cask provides adequate shielding during these transfer operations.

4. Fuel can not be stored at other reactors

The NRC has not received a request from the licensee and consequently has not performed a review to determine if the spent fuel assemblies from Big Rock Point could be stored at other reactors. However, the General Electric Company has publicly indicated that they will accept spent fuel for storage at their Morris, Illinois facility under unusual circumstances (such as an emergency)¹. This storage facility is capable of handling fuel from Big Rock Point.

The petition further indicates that the Petitioners believe defueling might be required to handle a reactor emergency. Therefore, they have concluded that the reactor should be shutdown since sufficient on-site storage capacity no longer exists to allow a complete defueling at Big Rock Point. The Staff has concluded that there is no foreseeable reactor emergency which would require immediate reactor defueling. The plant and reactor systems are designed to keep the reactor core in a safe condition during power operation, during shutdown, and during a reactor emergency. In the event of a reactor emergency these systems would be relied upon to keep the reactor core cooled for an extended period of time. Defueling could eventually be considered, but only after careful planning by the licensee and the NRC. Should defueling be called for, several options would exist to provide full core off-load capability. First, additional racks could be installed in the pool. Second, spent fuel could be shipped to a storage facility operated by General Electric. Third, spent fuel could be stored on-site in approved shipping casks.

III.

On the basis of the foregoing, I have determined that no adequate basis exists for suspension of operation of the Big Rock Point Plant. Consequently, the Petitioners' request is denied.

¹ NUREG-0695 "Environmental Impact Appraisal Related to the Renewal of Materials License SNM-1265 for the Receipt, Storage and Transfer of Spent Fuel" dated June 1980.

A copy of this Decision will be filed with the Secretary for the Commission's review in accordance with 10 CFR 2.206(c). As provided in this regulation, the Decision will become the final action of the Commission twenty-five (25) days after issuance, unless the Commission, on its own motion, institutes review of the Decision within that time.

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland
this 15th day of June, 1982.

Attachment:
License Amendment 52,
dated April 2, 1982

[The attachment has been omitted from this publication, but may be found in the NRC Public Document Room, 1717 H Street, N.W., 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. 50-509
50-513
(10 CFR 2.206)**

**WASHINGTON PUBLIC POWER
SUPPLY SYSTEM**

(WNP Nos. 4 & 5)

June 16, 1982

The Director of Nuclear Reactor Regulation denies two petitions filed by the Coalition for Safe Power which requested, respectively, revocation of the construction permit for WNP No. 4 on the basis of a material false statement and revocation of the construction permits for WNP Nos. 4 and 5 on the basis of WPPSS' termination of its participation in the projects.

ATOMIC ENERGY ACT: MATERIAL FALSE STATEMENTS

Omission of specific reference to financial constraints in application for extension of a construction permit did not constitute a material false statement in view of circumstances surrounding the application.

**RULES OF PRACTICE: REVOCATION OF CONSTRUCTION
PERMITS**

The Director declined to initiate proceedings to revoke construction permits for cancelled facilities where the licensee intended to retain the permits in hopes of finding a new owner and where enforcement action was not required to abate some hazard to public health and safety.

DIRECTOR'S DECISION UNDER 10 CFR 2.206

Nina Bell, on behalf of the Coalition for Safe Power, Portland, Oregon, has filed two petitions under 10 CFR 2.206 that request certain actions with respect to two nuclear projects for which the Washington Public

Power Supply System (WPPSS) holds construction permits. In its petition dated November 30, 1981, the Coalition requested that the Director of Nuclear Reactor Regulation issue an order to show cause why the construction permit for WPPSS Nuclear Project (WNP) No. 4 should not be revoked on the basis of an alleged "material false statement" in WPPSS' July 1981 application for an extension of the WNP No. 4 construction permit. The Coalition has filed another petition, dated March 16, 1982, under 10 CFR 2.206 which requests that WPPSS be ordered to show cause why the construction permits for WNP Nos. 4 and 5 should not be revoked, because WPPSS has announced its intention to terminate its participation in the two projects. For the reasons set forth in this decision, the Coalition's petitions are denied.

I. WPPSS DID NOT MAKE A "MATERIAL FALSE STATEMENT" IN ITS APPLICATION FOR EXTENSION OF THE WNP NO. 4 PERMIT.

On July 21, 1981, WPPSS submitted an application for extension of the latest completion dates for construction of WNP No. 1 and WNP No. 4.¹ WPPSS assigned the following reasons as bases for extending the permits:

"Subsequent to the issuance of the construction permits delays in the construction of WNP-1 and WNP-4 have occurred. The primary factors causing these delays are as follows:

1. Changes in the scope of the projects including increases in the amount of material and engineering required as a result of the regulatory actions, in particular those subsequent to the TMI-2 accident.
2. Construction delays and lower than estimated productivity which resulted in delays in installation of material and equipment and delays in completion of systems necessitating re-scheduling of preoperational testing.
3. Strikes by portions of the construction work force.
4. Changes in plant design.
5. Delays in delivery of equipment and materials."²

¹ The application consists of a three page letter from G. D. Bouchey, WPPSS Director of Nuclear Safety, to H. R. Denton, Director of NRR, and an affidavit signed by Mr. Bouchey. See Attachment C to the Coalition's Petition (Nov. 31, 1981). With respect to WNP No. 1, the application requests an extension of the latest completion date under Construction Permit No. CPPR-134 from January 1, 1982, to June 1, 1986. The application requests an extension of the latest completion date for WNP No. 4 under Construction Permit No. CPPR-174 from December 1, 1985, to June 1, 1987.

² Letter from G. D. Bouchey, at 1-2.

On October 26, 1981, WPPSS formally advised the staff that the WPPSS Board of Directors had voted to defer further construction of WNP Nos. 4 and 5 until June 30, 1983, "because of difficulties in simultaneous financing of all five of our plants now under construction, given the current high interest rates and bond market conditions."³ WPPSS subsequently withdrew its July 21, 1981, application insofar as it requested an extension of the WNP No. 4 construction permit in view of its deferral of the project's construction.⁴

The Coalition claims that WPPSS made a material false statement in its July 21st application because WPPSS omitted any mention of cash flow difficulties affecting the completion date of WNP-4. The Coalition points to a study prepared for WPPSS that examined options to slow the pace of construction on WNP Nos. 4 and 5 as a way to reduce the burden of near-term funding requirements. See WPPSS. *Alternative Evaluations - WNP 4/5* (March 26, 1981) (Attachment A to Coalition petition). The Coalition also notes that the WPPSS Managing Director proposed a one-year moratorium on construction of WNP Nos. 4 and 5 in May 1981 to the WPPSS Board of Directors as a way of easing WPPSS' immediate financial burdens. The moratorium would also provide an opportunity to re-examine WPPSS' need to build the two projects. See Speech of Robert Ferguson, 1 *Power Lines* [WPPSS newsletter] at 3-6 (June 12, 1981) (Attachment B to Coalition petition). The WPPSS Board of Directors approved the one-year moratorium on construction. See Coalition Petition at 3 (Nov. 30, 1981). The Coalition charges that, by omitting any reference to the foregoing facts, WPPSS made a material false statement, because these facts indicate "cash flow difficulties" affecting the completion date for WNP No. 4. Consequently, the Coalition urges the construction permit for WNP No. 4 should be revoked for this alleged offense.

Although the Coalition's petition might otherwise be considered moot because WPPSS has withdrawn the extension application for WNP No. 4, the substance of the Coalition's petition should be addressed to dispel the notion that WPPSS committed the alleged violation. Moreover, withdrawal of the application would not in itself absolve WPPSS of responsibility for a material false statement had one been made. Under the circumstances here, WPPSS did not make a material false statement.

³ Letter from R. L. Ferguson, WPPSS Managing Director, to H. R. Denton, Director of NRR (Oct. 26, 1981).

⁴ Letter from J. W. Shannon, WPPSS Director of Safety & Security, to H. R. Denton, Director of NRR (Dec. 31, 1981). WPPSS indicated in this letter that it might reapply for the extension of the WNP No. 4 permit after June 1983. WPPSS has since announced termination of the project. See note 10 *infra*.

The Commission's authority to take enforcement action for material false statements derives from section 186 of the Atomic Energy Act of 1954, as amended:

"Any license may be revoked for any material false statement in the application or any statement of fact required under section 182, 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" 42 U.S.C. 2236(a).

The Commission addressed the meaning of the term "material false statement" in its decision in *Virginia Electric & Power Co.*, (North Anna Power Station, Units 1 & 2), CLI-76-22, 4 NRC 480 (1976); *aff'd* 571 F.2d 1289 (4th Cir. 1978) (hereinafter *VEPCO*). In *VEPCO*, the Commission determined that material false statements encompass material omissions. 4 NRC at 489-91. Knowledge of falsity is not necessary for liability for a material false statement. 4 NRC at 486. With respect to the materiality of an omission, the Commission stated:

"By reading material false statements to encompass omissions of material data, we do not suggest that unless all information, however trivial, is forwarded to the agency the applicant will be subject to civil penalties. An omission must be material to the licensing process to bring Section 186 into play [D]eterminations of materiality require careful, common-sense judgments of the context in which information appears and the stage of the licensing process involved. Materiality depends upon whether information has a natural tendency or capability to influence a reasonable agency expert." 4 NRC at 491.

In the context of an application for extension of a construction permit, WPPSS' omission of a specific reference to its financial burdens and its planned delay of construction to ease those burdens did not constitute a material omission.

No specific form of application is required, but the Commission's regulations indicate that good cause for extension of a permit cause may be shown by pleading

"among other things, developmental problems attributable to the experimental nature of the facility or fire, flood, explosion, strike, sabotage, domestic violence, enemy action, an act of the elements, and other acts beyond the control of the permit holder, as a basis for extending the completion date." 10 CFR 50.55(b).

No particular analysis or detailed evaluation of the reasons supporting an extension is specified, though, of course, the applicant risks denial of the

application if the showing of cause is stated too summarily or excludes mention of additional reasons that would warrant extension.

In this instance, WPPSS briefly stated several common reasons contributing to delays in completion of WNP Nos. 1 and 4. Although WPPSS did not specifically mention financial considerations as a cause of delays in construction of WNP No. 4, WPPSS lists "construction delays" as one of the "primary factors" that caused its inability to meet the completion date and that would thereby justify an extension. Given the general state of the nuclear industry, the staff would consider "construction delays" to include delays caused by, or planned to alleviate, financial constraints. The staff has considered a number of extension applications in the past few years that have attributed delays in construction to economic conditions or financial considerations. See note 7 *infra*. The staff was generally aware that WPPSS was facing significant burdens in attempting to finance construction of its five nuclear projects. The financial strain and the decision by the WPPSS Board of Directors in June 1981 to slow construction of WNP Nos. 4 and 5 were reported in the trade press.⁵

Financial considerations leading to a planned reduction in construction activity do not pose in themselves a *safety* issue that would have tended to cause the staff to look at WPPSS' application for extension in a different light.⁶ Moreover, the planned delay due to financial considerations could well have been an acceptable justification for the requested extension. Extension applications have been granted in the past when applicants have requested extension of the facility completion date on the basis of financial constraints that slowed construction schedules.⁷

This was not an instance in which, after the filing of the application, the staff had requested information about or had expressed an interest in a certain subject matter concerning the application and the applicant had failed to fully and accurately respond to the staff's request for information. And, it should be noted, the staff was informed of developments regarding construction of WNP No. 4 after WPPSS tendered the application in July

⁵ See, e.g., *WPPSS Construction Bonds Were Downgraded Only A Bit by Standard & Poor's*, 22 *Nucleonics Week* No. 25, at 9-10 (June 25, 1981); *Last Week's Downgrading of WPPSS Construction Bonds*, 22 *Nucleonics Week* No. 24, at 12 (June 18, 1981).

⁶ Cf. *Elimination of Review of Financial Qualifications of Electric Utilities in Licensing Hearings for Nuclear Power Plants*, 47 *Fed. Reg.* 13750, 13751 (March 31, 1982).

⁷ See, e.g., *Orders Extending Construction Completion Dates*, 46 *Fed. Reg.* 62989 (Dec. 29, 1981) (Callaway plant); 46 *Fed. Reg.* 56264 (Nov. 16, 1981) (Waterford Station); 46 *Fed. Reg.* 46032 (Sept. 16, 1981) (Hope Creek Station); 46 *Fed. Reg.* 29804 (June 3, 1981) (Limerick Station); 44 *Fed. Reg.* 29547 (May 21, 1979) (North Anna Station).

1981.⁸ In view of the general state of the industry and the particular circumstances surrounding WPPSS application, the staff was not misled by omission of a specific reference to financial constraints in the extension application. The staff does not find that WPPSS should be charged with making a "material false statement" in its July 21st application. The Coalition's petition dated November 30, 1981 is *denied*.⁹

II. NO COMPELLING REASONS WARRANT REVOCATION OF THE PERMITS FOR WNP NOS. 4 AND 5.

The Coalition's latest petition, dated March 16, 1982, requests that WPPSS be ordered to show cause why the construction permits for WNP Nos. 4 and 5 should not be revoked on the basis of the WPPSS Board of Directors' adoption of a resolution terminating the projects. In these particular circumstances, an order is not warranted, and, therefore, the Coalition's petition is denied.

The WPPSS Board of Directors adopted the resolution terminating the projects on January 22, 1982, and soon thereafter WPPSS informed the Executive Director for Operations of its intention to conduct a two-phase plan for termination.¹⁰ Initially, WPPSS intends to attempt to sell the plants to a new owner. If WPPSS finds that it is unlikely that the projects can be sold in their entirety, WPPSS may attempt to sell plant equipment and materials in some other manner. WPPSS intends to retain the construction permits at least during the first phase of its termination plan that calls for an attempted transfer of the projects to a new owner. The

⁸ The NRR project manager was informed by telephone in August 1981 that WPPSS was considering more extensive deferrals of construction on WNP No. 4, and generally kept himself appraised of the situation via telephone calls, media reports and site visits (for other reasons) in September and October 1981. On the basis of the uncertainties surrounding WNP No. 4's future, NRR had not initiated any review of the extension application. After the WPPSS Board approved deferral of construction of WNP Nos. 4 and 5 until June 30, 1983, WPPSS informed NRR of the construction deferral. See *supra* note 3. Eventually, WPPSS withdrew the extension application. See *supra* note 4.

⁹ Even if the omission had been found to be a "material false statement", permit revocation would not necessarily follow. Although section 186 of the Atomic Energy Act authorizes revocation for material false statements, it does *not* compel revocation. Rather, the Commission is empowered to impose the remedy it deems fit for the gravity of the offense, and could impose enforcement sanctions ranging from a notice of violation (10 CFR 2.201) to civil penalties (10 CFR 2.205) to appropriate orders (10 CFR 2.202 & 2.204). Any attempted suspension or revocation of the permit would also be subject to the second chance doctrine of section 9(b) of the Administrative Procedure Act. 5 USC 558(c); see also Atomic Energy Act §186b, 42 U.S.C. 2236(b).

¹⁰ See Letter from R. L. Ferguson, WPPSS Managing Director, to W. J. Dircks, EDO (Feb. 1, 1982) (Attachment B to Coalition petition dated March 16, 1982).

construction permits for WNP Nos. 4 and 5 would otherwise expire by their own terms in 1985 and 1986 respectively.

The Coalition's petition is based on WPPSS' intended termination of the project owing to financial considerations. However, termination of the projects does not itself pose any hazard to public health and safety that would require issuance of an order to show cause.¹¹ Although the NRC has no interest in seeing that WPPSS salvages a portion of its investment in the projects, there is no reason for the NRC to obstruct WPPSS' efforts when public health and safety is not affected by WPPSS' actions.¹²

The staff recognizes that a similar petition under 10 CFR 2.206 has been granted on one occasion. See *Northern States Power Co.* (Tyrone Energy Park, Unit 1), CLI-80-36, 12 NRC 523 (1980).¹³ The staff's action in that instance does not compel, however, the same result here. In *Tyrone*, the co-owners of the project announced no specific plans to find another owner of the project and indicated no desire to retain the construction permit.¹⁴ Moreover, the co-owners consented to revocation of the Tyrone permit. See *Order Revoking Construction Permit*, 46 Fed. Reg. 11746 (Feb. 10, 1981). The circumstances surrounding the termination of WPPSS' participation in WNP Nos. 4 and 5 are different. WPPSS wants to retain the permits in the hope that it may be able to transfer the projects to a new owner. Such action, subject to Commission approval, is lawful, and WPPSS' plans to preserve the present status of the plants appear reasonable.¹⁵ The issuance of an order to show cause is not required in these circumstances to abate some hazard to public health and safety. Although formal termination of the permits may be appropriate at some future date, no compelling reason exists to take such a step at this time.

¹¹ See *Northern Indiana Public Service Co.* (Bailey Generating Station, Nuclear-1), CLI-78-7, 7 NRC 429, 433 (1978), *aff'd sub nom. Porter County Chap. of the Izaak Walton League, Inc. v. NRC*, 606 F.2d 1363 (D.C. Cir. 1979). In the recent statement of consideration concerning the *Elimination of Review of Financial Qualifications of Electric Utilities in Licensing Hearings for Nuclear Power Plants*, 47 Fed. Reg. 13750, 13751 (March 31, 1982), the Commission noted, "WPPSS' response (and that of most other utilities encountering financial difficulties) has been to postpone or cancel their plants, actions clearly not inimical to public health and safety under the Atomic Energy Act."

¹² Of course, any transfer of the construction permits would require the Commission's approval. See Atomic Energy Act §184, 42 U.S.C. 2234, 10 CFR 50.54(e) & 50.80.

¹³ The *Order to Show Cause* was published at 45 Fed. Reg. 42093 (June 23, 1980); the *Order Revoking Construction Permit* was published at 46 Fed. Reg. 11746 (Feb. 10, 1981).

¹⁴ The permittees' cancellation of the Tyrone project was based largely on the Wisconsin Public Service Commission's denial of the necessary state certificate to construct the facility.

¹⁵ See letter from R. L. Tedesco, Ass't Director for Licensing, Division of Licensing, NRR, to R. L. Ferguson, WPPSS Managing Director (Attachment C to Coalition petition dated March 16, 1982).

III. CONCLUSION

WPPSS made no material false statement in its application for extension of the WNP No. 4. No substantial health and safety issue warrants issuance of an order to show cause. For these basic reasons, the Coalition for Safe Power's petitions dated November 30, 1981, and March 16, 1982 are *denied*. As provided in 10 CFR 2.206(c), a copy of this decision will be filed with the Secretary for the Commission's review.

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland
this 16th day of June, 1982.

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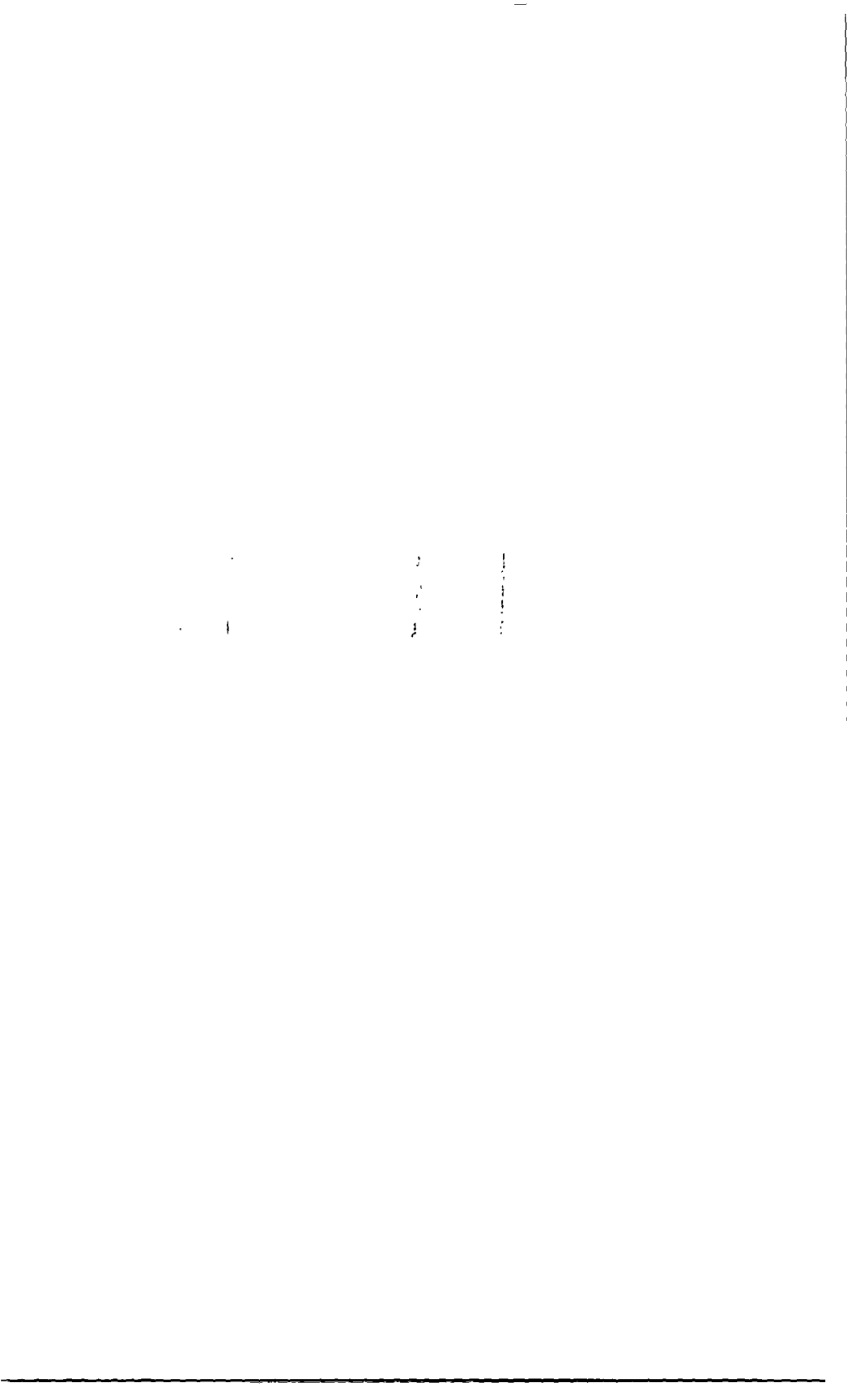
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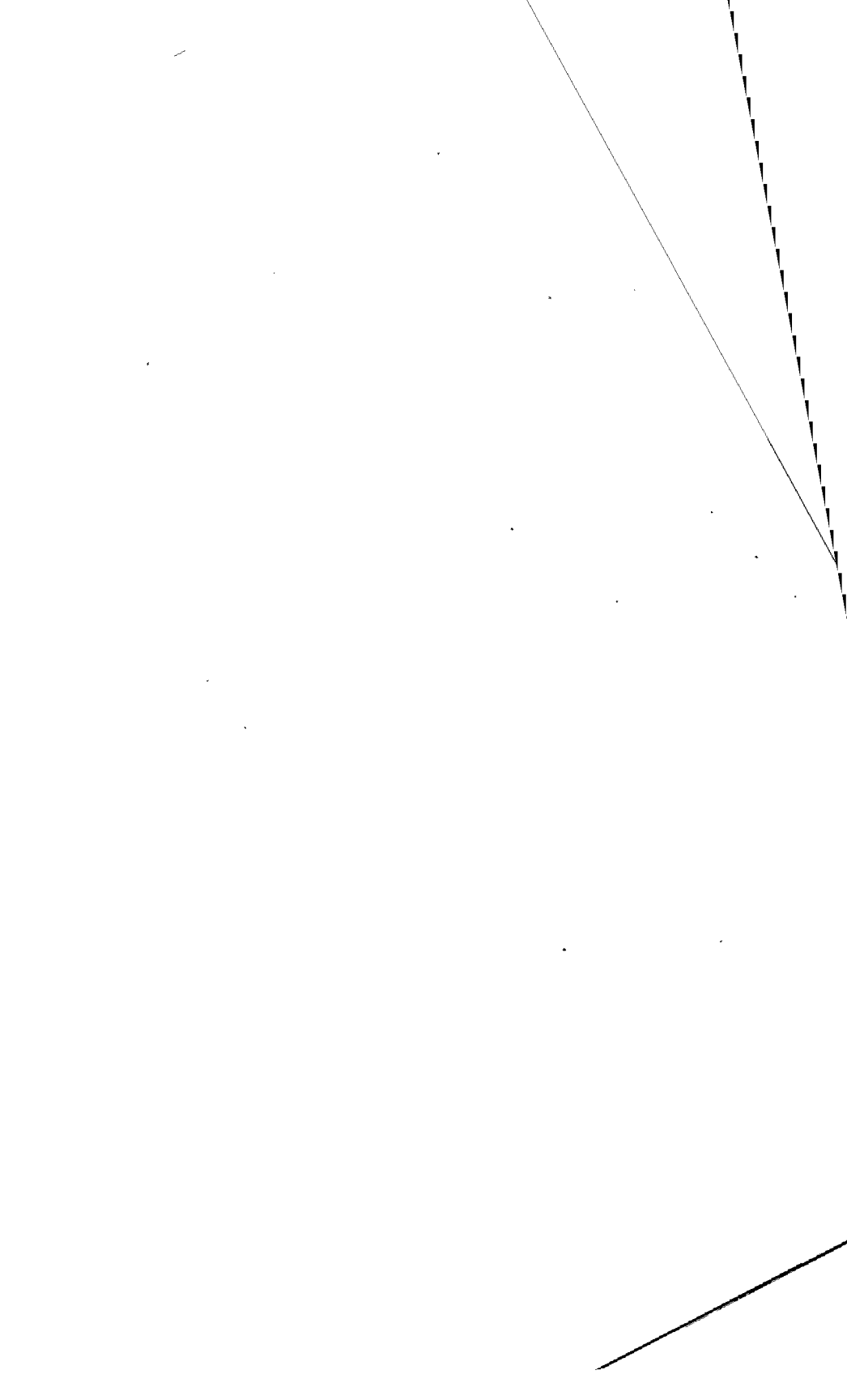
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